SERVICE MANUAL

IDH MAX® LOCK

SERVICE MANUAL

BEST ACCESS SYSTEMS

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1 GETTING STARTED

INTRODUCTION

The *IDH Max Service Manual* contains essential information to help you maintain your IDH Max Locks. Throughout this manual, the term IDH Max is used to refer to 34HW/35HW EEL, EEU, NEL, NEU function locks and 83KW/93KW–85KW/95KW DDEL, DDEU function locks.

CERTIFICATIONS AND STANDARDS

IDH Max Locks

- The 8KW/9KW and 34–37HW locks are UL listed for GYQS electrically controlled single point locks or latches.
- The 8KW/9KW and 34–37HW locks are approved by the California State Fire Marshal (CSFM) pursuant to section 13144.1 of the California Health and Safety Code.
- The 8KW/9KW locks are approved by the city of New York Board of Standards and Appeals under calendar number 730-89-SA. See CSFM listing number 4136-1175:103.
- The 34–37HW locks are approved by the city of New York Board of Standards and Appeals under calendar number 49-88-SA. See CSFM listing number 4136-1175:101.

Mortise locks

- The strike fits the standard door frame cutout as specified in ANSI A115.1.
- The lock case and faceplate dimensions fit the standard door preparation as specified in ANSI A115.1.
- The 34H/35H locks meet or exceed ANSI A156.13, Series 1000, Grade 1 Operational, and Grade 2 Security standards.
- The 36H/37H locks meet or exceed ANSI A156.13, Series 1000, Grade 1 Operational, and Grade 1 Security standards.
- The 34–37H locks are certified in the Builders Hardware Manufacturers Association Directory and comply with FF-HH-106C standard.
- The 34–37H locks are listed by Underwriter's Laboratories for use on 3 Hr., A label doors. These locks also carry the C-UL mark.
- The 36H/37H locks conform to UL437 Standard for Key Locks, referencing door locks.
- The 36H/37H high security cylinder complies with ANSI Grade 1 Security and is UL listed (UL 437), both in Canada and the US. The cylinder also conforms to ANSI A156.5 mortise cylinder, Grade 1A.

Cylindrical locks

- The 9K locks comply with ANSI A156.2, Series 4000 Grade 1 standards.
- The 9K locks are listed by Underwriter's Laboratories for use on 3 Hr., A label single swinging doors (4′ x 10′), or pairs of doors 8′ wide and 10′ high.
- The chassis conforms to ANSI A115.2.
- The 8KS3 strike fits the standard door frame cutout as specified in ANSI A115.2.
- The #14 and #15 lever handles conform to California Administrative Code Title 19 and Title 24.
- The #14, #15, and #16 lever handles conform to the Illinois Accessibility Standard.

DOCUMENTATION PACKAGE

The following documentation is available to help you with the installation, start-up, and maintenance of your IDH Max Locks.

The installation, assembly, and wiring instructions also can be ordered separately:

Document Title	Doc. No.
Installation Instructions for 34HW/35HW IDH Max Mortise Locks[a]	*T61843*
Installation Instructions for 83KW/93KW–85KW/95KW IDH Max Cylindrical Locks[a]	*T61842*
Installation Instructions for 9K Non-interchangeable Cores & Throw Members	*T56093*

a. These installation instructions are included in this service manual. See *Installation Instructions* (page B–1).

The templates and specifications required for lock installations also can be ordered separately:

Document Title	Doc. No.
W13 Template; Installation Specifications for 34HW–35HW IDH Max Mortise Locks	*T60776*
W14 Template; Installation Specifications for 83KW/93KW–85KW/95KW IDH Max Cylindrical Locks	*T60777*
W15 Template; Installation Template for 34HW–35HW IDH Max Mortise Locks	*T60772*
W16 Template; Installation Template for 83KW/93KW–85KW/95KW IDH Max Cylindrical Locks	*T60773*

The service manuals referred to in this manual can also be ordered separately:

Document Title	Doc. No.
H Series Service Manual	*T61964*
9K Series Service Manual	*T56082*
8K Series Service Manual	*T56081*

TECHNICAL SUPPORT

Support services

When you have a problem with an IDH Max Lock, your first resource for help is the *IDH Max Service Manual*. If you cannot find a satisfactory answer, contact your local BEST Representative.

Telephone technical support

A factory-trained Certified Product Specialist (CPS) is available in your area whenever you need help. Before you call, however, please make sure you are where the hardware is located, and that you are prepared to give the following information:

- what happened and what you were doing when the problem arose
- what you have done so far to fix the problem.

Best Access Systems Representatives provide telephone technical support for all W Series products. You may locate the Representative nearest you by calling (317) 849-2250 Monday through Friday, between 7:00 a.m. and 4:00 p.m. eastern standard time; or visit the web page www.BestAccess.com.

2 FUNCTIONS AND PARTS

The following pages contain function descriptions for all IDH Max Locks. This chapter also includes exploded diagrams that show all field-serviceable mechanical parts, diagrams of trim and other miscellaneous parts, as well as function and trim conversion information.

FUNCTION DESCRIPTIONS

This section includes function descriptions grouped by the following function types:

- mortise
- cylindrical.

Mortise functions

The following lists describe how the latchbolt, outside lever, and inside lever operate for each IDH Max mortise function.

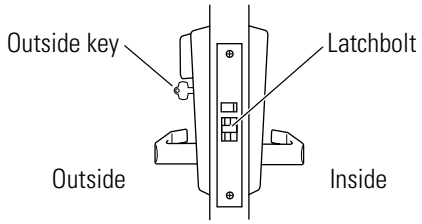
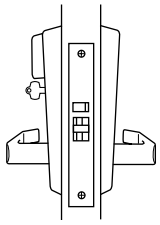


Figure 2.1 Understanding mortise function drawings

EEL–Electrically Locked–Fail Safe



Latchbolt operated by:

- inside lever/knob
- outside lever/knob when electric power is removed from the solenoid
- outside key

Outside lever/knob locked by:

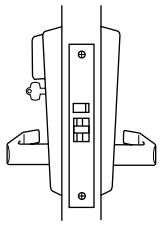
- applying 12 VDC to the solenoid; remains locked only while power continues to be applied

Outside lever/knob unlocked by:

- removing 12 VDC from the solenoid

Inside lever/knob is always unlocked

EEU–Electrically Unlocked–Fail Secure



Latchbolt operated by:

- inside lever/knob
- outside lever/knob when electric power is applied to the solenoid
- outside key

Outside lever/knob locked by:

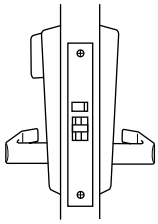
- removing 12 VDC from the solenoid

Outside lever/knob unlocked by:

- applying 12 VDC to the solenoid; remains unlocked only while power continues to be applied

Inside lever/knob is always unlocked

NEL–Electrically Locked–Fail Safe



Latchbolt operated by:

- inside lever/knob
- outside lever/knob when electric power is removed from the solenoid

Outside lever/knob locked by:

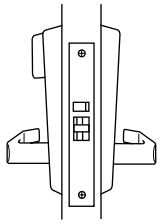
- applying 12 VDC to the solenoid; remains locked only while power continues to be applied

Outside lever/knob unlocked by:

- removing 12 VDC from the solenoid

Inside lever/knob is always unlocked

NEU–Electrically Unlocked–Fail Secure



Latchbolt operated by:

- inside lever/knob
- outside lever/knob when electric power is applied to the solenoid

Outside lever/knob locked by:

- removing 12 VDC from the solenoid

Outside lever/knob unlocked by:

- applying 12 VDC to the solenoid; remains unlocked only while power continues to be applied

Inside lever/knob is always unlocked

Cylindrical functions

The following lists describe how the latchbolt, outside lever, and inside lever operate for each IDH Max cylindrical function.

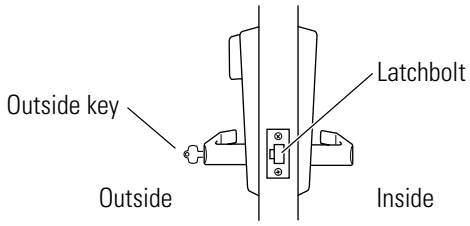
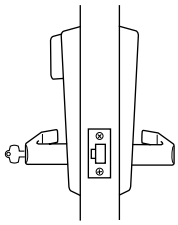


Figure 2.2 Understanding cylindrical function drawings

DDEL–Electrically Locked–Fail Safe



Latchbolt operated by:

- inside lever/knob
- outside lever/knob when electric power is removed from the solenoid
- outside key

Outside lever/knob locked by:

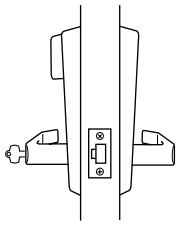
- applying 12 VDC to the solenoid; remains locked only while power continues to be applied

Outside lever/knob unlocked by:

- removing 12 VDC from the solenoid

Inside lever/knob is always unlocked

DDEU–Electrically Unlocked–Fail Secure



Latchbolt operated by:

- inside lever/knob
- outside lever/knob when electric power is applied to the solenoid
- outside key

Outside lever/knob locked by:

- removing 12 VDC from the solenoid

Outside lever/knob unlocked by:

- applying 12 VDC to the solenoid; remains unlocked only while power continues to be applied

Inside lever/knob is always unlocked

TRIM COMPONENTS
PROXIMITY CARD READER AND TRIM EXPLODED DIAGRAM

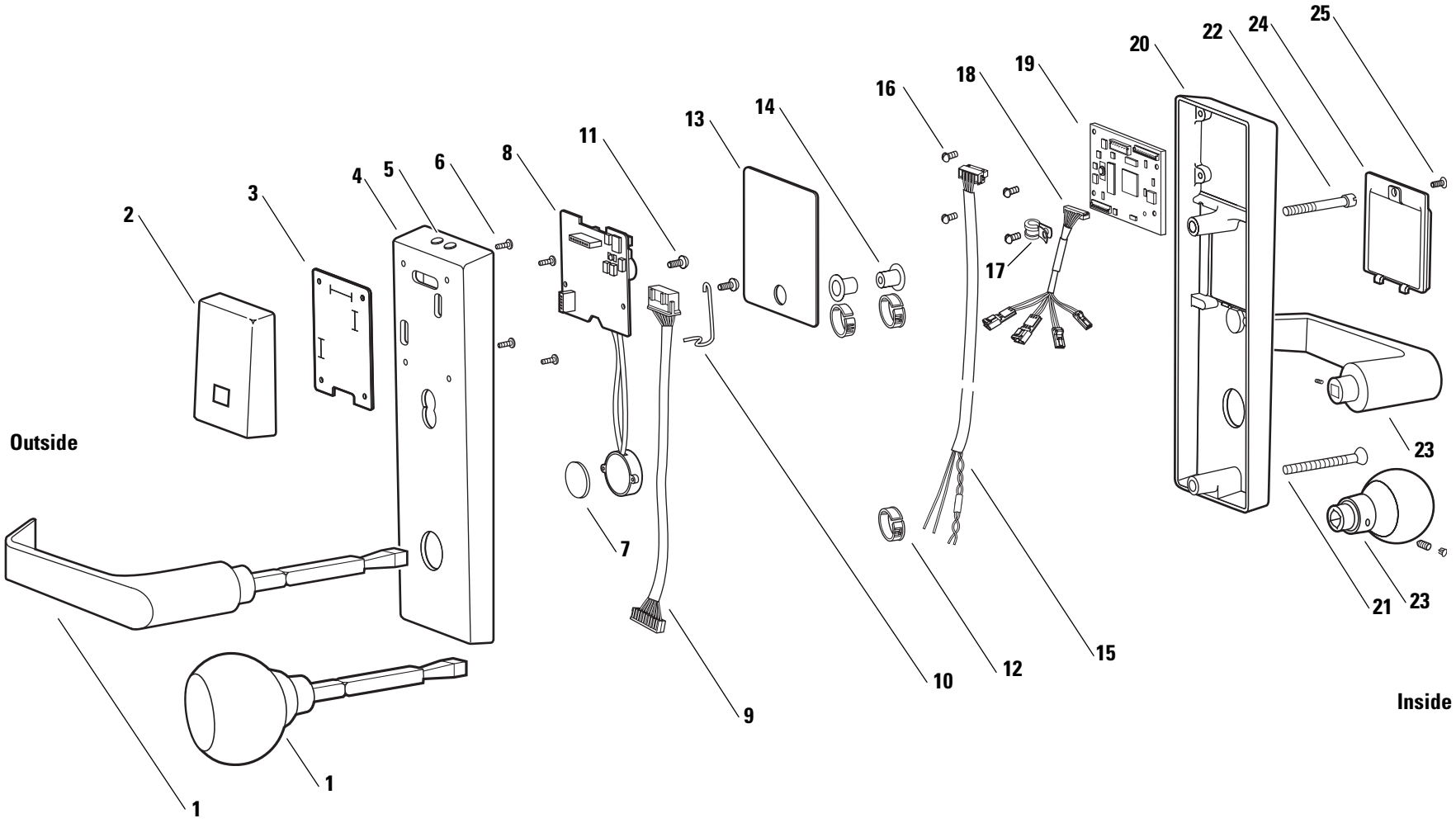


Figure 2.3 Proximity card reader and trim exploded diagram

Proximity card reader and trim parts list

Refer to Figure 2.3 and the table below to find the part you need or to convert the function of the lock.

Item	Part No.	Qty.	Description	EEU	EEL	NEU	NEL	DDEU	DDEL
1	A35084	1	#4 outside knob assembly[a] *or*	■	■	■	■		
(1)	A35455	1	#15 outside lever assembly[b] *or*	■	■	■	■		
not shown	B54704	1	#4 keyed knob[c] *or*					■	■
not shown	B55168	1	#15 keyed lever handle[d]					■	■
2	B64404	1	HID proximity card reader with antenna *or*	■	■	■	■	■	■
not shown	B64403	1	Motorola proximity card reader with antenna	■	■	■	■	■	■
3	B60321	1	Reader gasket	■	■	■	■	■	■
4	D62566	1	35HW outside escutcheon with key *or*	■	■				
not shown	D62565	1	35HW outside escutcheon without key *or*			■	■		
not shown	D62571	1	35HW outside escutcheon, for use with non-interchangeable cores *or*	■	■				
not shown	D62569	1	34HW outside escutcheon with key *or*	■	■				
not shown	D62568	1	8KW/34HW outside escutcheon without key *or*			■	■	■	■
not shown	D62572	1	34HW outside escutcheon, for use with non-interchangeable cores *or*	■	■				
not shown	D62567	1	9KW outside escutcheon					■	■
not shown	A60344	1	HID FCC label (affixed to the outside escutcheon) *or*	■	■	■	■	■	■
not shown	A60343	1	Motorola FCC label (affixed to the outside escutcheon)	■	■	■	■	■	■
5	A60317	2	Lens cover	■	■	■	■	■	■
not shown	A60318	2	Lens retaining ring	■	■	■	■	■	■
6	See page 2–13	4	Reader electronics mounting screw	■	■	■	■	■	■
7	A60324	1	Tape for mounting the sounder	■	■	■	■	■	■
8	B80902	1	Reader circuit board assembly	■	■	■	■	■	■
9	B61333	1	Reader wire harness	■	■	■	■	■	■
10	B63294	1	Harness clamp	■	■	■	■	■	■
11	A61429	2	Reader circuit board mounting screw	■	■	■	■	■	■
12	A61433	3	Bushing	■	■	■	■	■	■
13	A60725	1	Outside escutcheon gasket	■	■	■	■	■	■
14	B61439	2	Trim hole insert	■	■	■	■	■	■
15	B61326	1	Field wire harness	■	■	■	■	■	■
16	See page 2–13	4	Control electronics mounting screw	■	■	■	■	■	■
17	1805968	1	Cable clamp	■	■	■	■	■	■
18	B61327	1	Sensor and solenoid wire harness	■	■	■	■	■	■
19	B63022	1	Control electronics circuit board	■	■	■	■	■	■
20	C62104	1	35HW inside escutcheon *or*	■	■	■	■		
not shown	C62103	1	8KW/34HW inside escutcheon *or*	■	■	■	■	■	■
not shown	C62102	1	9KW inside escutcheon					■	■
21	See page 2–13	1	Lower escutcheon screw	■	■	■	■	■	■
22	See page 2–13	1	Upper escutcheon screw	■	■	■	■	■	■

Item	Part No.	Qty.	Description	EEU	EEL	NEU	NEL	DDEU	DDEL
23	C62520	1	#4 inside knob assembly[a] *or*	■	■	■	■		
(23)	A35454	1	#15 inside lever assembly[b] *or*	■	■	■	■		
not shown	B54707	1	# 4 plain knob[c] *or*					■	■
not shown	B55169	1	#15 plain lever handle[d]					■	■
24	B62128	1	Access door	■	■	■	■	■	■
25	See page 2–13	1	Access door screw (TORX with post head) *or*	■	■	■	■	■	■
not shown	See page 2–13	1	Access door screw (McGard head)	■	■	■	■	■	■

a. See the *H Series Service Manual* for other knob styles.
b. See the *H Series Service Manual* for other lever styles.
c. See the *8K Series Service Manual* for other knob styles.
d. See the *9K Series Service Manual* for other lever styles.

MAGNETIC STRIPE SWIPE CARD READER AND TRIM EXPLODED DIAGRAM

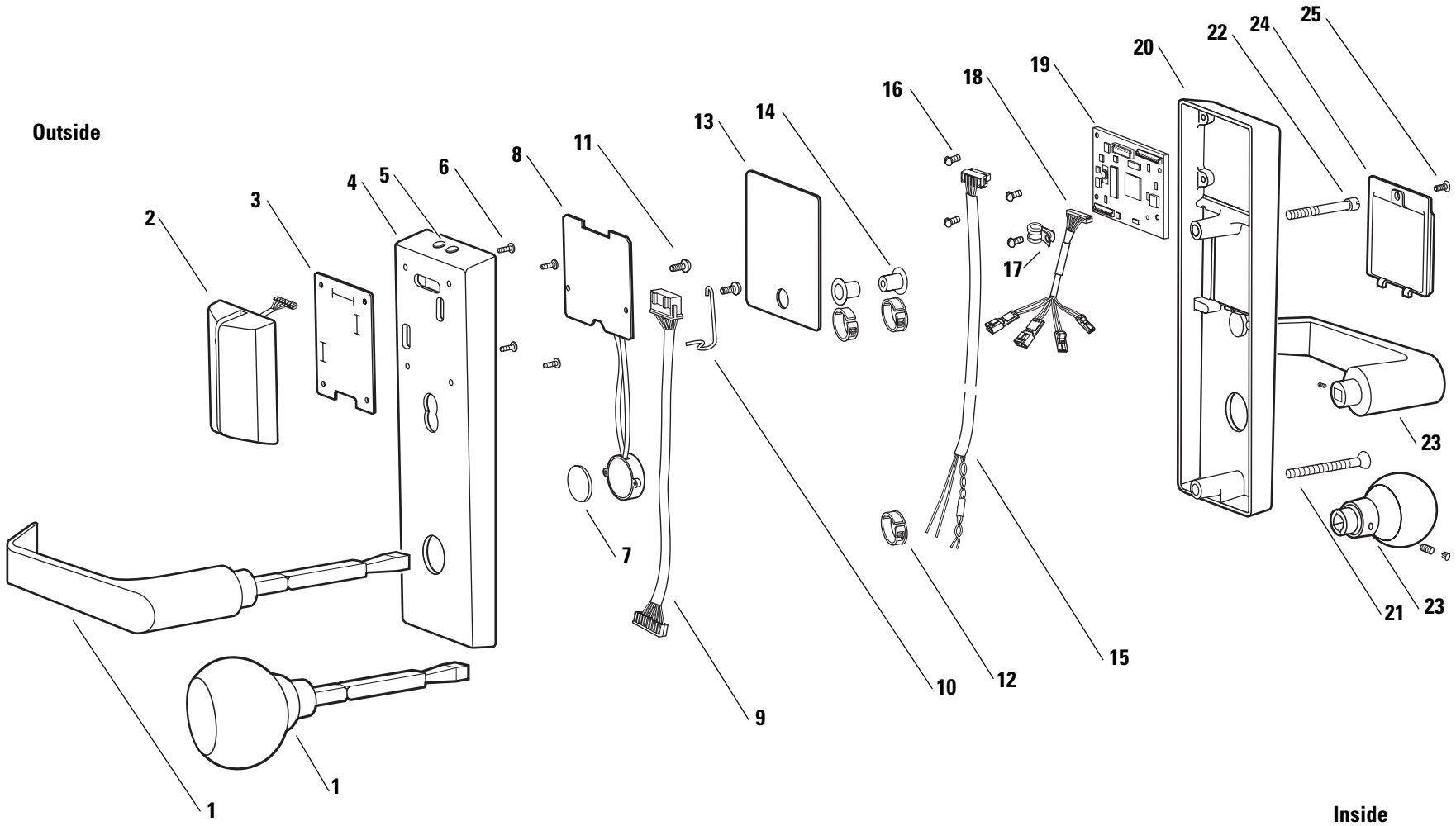


Figure 2.4 Magnetic stripe swipe card reader and trim exploded diagram

Magnetic stripe swipe card reader and trim parts list

Refer to Figure 2.4 and the table below to find the part you need or to convert the function of the lock.

Item	Part No.	Qty.	Description	EEU	EEL	NEU	NEL	DDEU	DDEL
1	A35084	1	#4 outside knob assembly[a] *or*	■	■	■	■		
(1)	A35455	1	#15 outside lever assembly[b] *or*	■	■	■	■		
not shown	B54704	1	#4 keyed knob[c] *or*					■	■
not shown	B55168	1	#15 keyed lever handle[d]					■	■
2	B63269	1	Magnetic stripe swipe card reader	■	■	■	■	■	■
3	B60321	1	Reader gasket	■	■	■	■	■	■
4	D62566	1	35HW outside escutcheon with key *or*	■	■				
not shown	D62565	1	35HW outside escutcheon without key *or*			■	■		
not shown	D62571	1	35HW outside escutcheon, for use with non-interchangeable cores *or*	■	■				
not shown	D62569	1	34HW outside escutcheon with key *or*	■	■				
not shown	D62568	1	8KW/34HW outside escutcheon without key *or*			■	■	■	■
not shown	D62572	1	34HW outside escutcheon, for use with non-interchangeable cores *or*	■	■				
not shown	D62567	1	9KW outside escutcheon					■	■
not shown	1773340	1	FCC label (affixed to the outside escutcheon)	■	■	■	■	■	■
5	A60317	2	Lens cover	■	■	■	■	■	■
not shown	A60318	2	Lens retaining ring	■	■	■	■	■	■
6	See page 2–13	4	Reader electronics mounting screw	■	■	■	■	■	■
7	A60324	1	Tape for mounting the sounder	■	■	■	■	■	■
8	B80901	1	Reader circuit board assembly	■	■	■	■	■	■
9	B61333	1	Reader wire harness	■	■	■	■	■	■
10	A61429	2	Reader circuit board mounting screw	■	■	■	■	■	■
11	B63294	1	Harness clamp	■	■	■	■	■	■
12	A61433	3	Bushing	■	■	■	■	■	■
13	A60725	1	Outside escutcheon gasket	■	■	■	■	■	■
14	B61439	2	Trim hole insert	■	■	■	■	■	■
15	B61326	1	Field wire harness	■	■	■	■	■	■
16	See page 2–13	4	Control electronics mounting screw	■	■	■	■	■	■
17	1805968	1	Cable clamp	■	■	■	■	■	■
18	B61327	1	Sensor and solenoid wire harness	■	■	■	■	■	■
19	B63022	1	Control electronics circuit board	■	■	■	■	■	■
20	D62104	1	35HW inside escutcheon *or*	■	■	■	■		
not shown	D62103	1	8KW/34HW inside escutcheon *or*	■	■	■	■	■	■
not shown	D62102	1	9KW inside escutcheon					■	■
21	See page 2–13	1	Lower escutcheon screw	■	■	■	■	■	■
22	See page 2–13	1	Upper escutcheon screw	■	■	■	■	■	■
23	C62520	1	#4 inside knob assembly[a] *or*	■	■	■	■		
(23)	A35454	1	#15 inside lever assembly[b] *or*	■	■	■	■		

Item	Part No.	Qty.	Description	EEU	EEL	NEU	NEL	DDEU	DDEL
not shown	B54707	1	# 4 plain knob[c] *or*					■	■
not shown	B55169	1	#15 plain lever handle[d]					■	■
24	B62128	1	Access door	■	■	■	■	■	■
25	See page 2-13	1	Access door screw (TORX with post head) *or*	■	■	■	■	■	■
not shown	See page 2-13	1	Access door screw (McGard head)	■	■	■	■	■	■

a. See the *H Series Service Manual* for other knob styles.
b. See the *H Series Service Manual* for other lever styles.
c. See the *8K Series Service Manual* for other knob styles.
d. See the *9K Series Service Manual* for other lever styles.

MAGNETIC STRIPE INSERTION CARD READER AND TRIM EXPLODED DIAGRAM

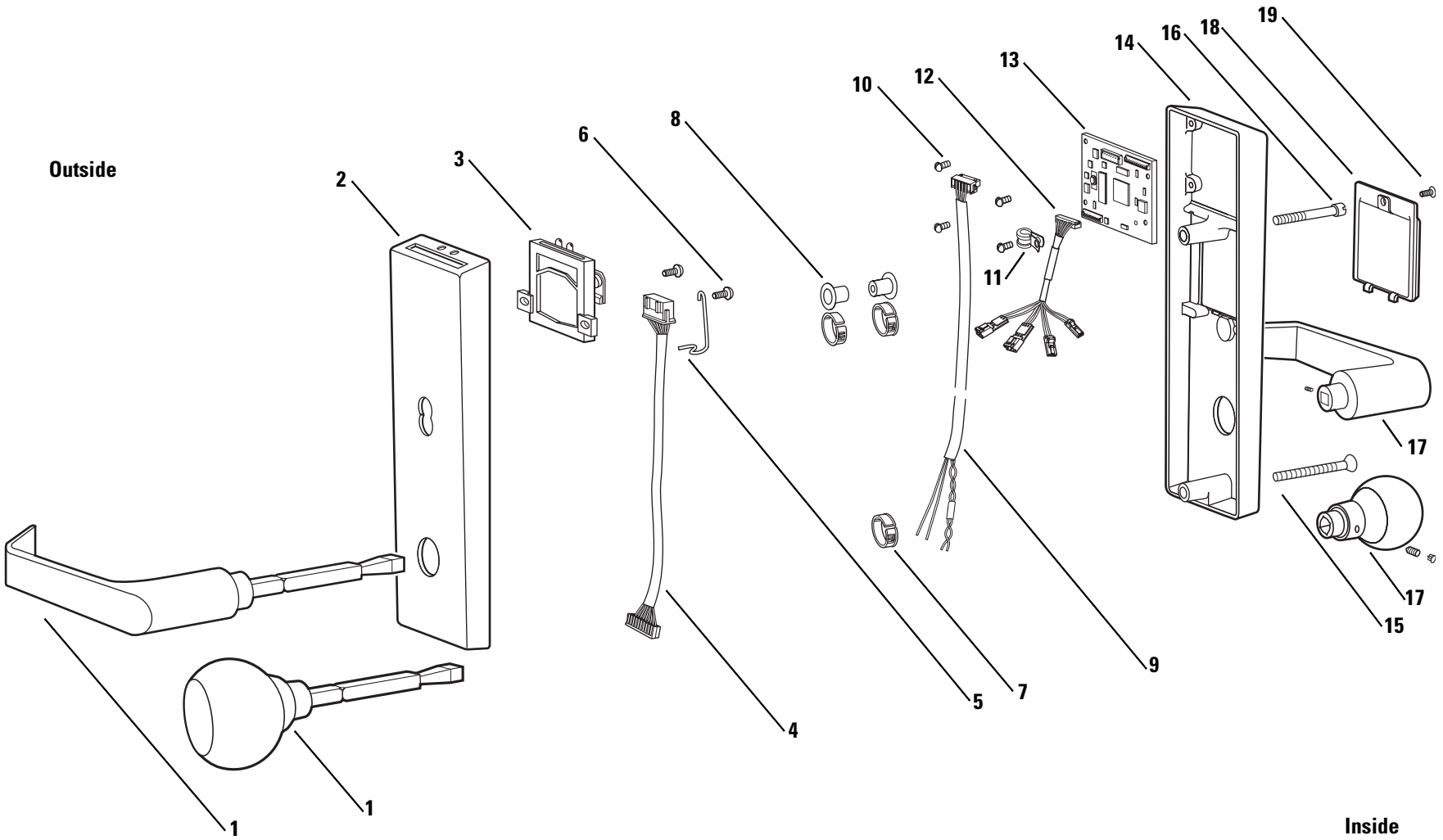


Figure 2.5 Magnetic stripe insertion card reader and trim exploded diagram

Magnetic stripe insertion card reader and trim parts list

Refer to Figure 2.5 and the table below to find the find the part you need or to convert the function of the lock.

Item	Part No.	Qty.	Description	EEU	EEL	NEU	NEL	DDEU	DDEL
1	A35084	1	#4 outside knob assembly[a] *or*	■	■	■	■		
(1)	A35455	1	#15 outside lever assembly[b] *or*	■	■	■	■		
not shown	B54704	1	#4 keyed knob[c] *or*					■	■
not shown	B55168	1	#15 keyed lever handle[d]					■	■
2	D62556	1	35HW outside escutcheon with key *or*	■	■				
not shown	D62558	1	8KW/34HW outside escutcheon without key *or*			■	■	■	■
not shown	D62557	1	9KW outside escutcheon					■	■
not shown	1773340	1	FCC label (affixed to the outside escutcheon)	■	■	■	■	■	■
3	B61646	1	Magnetic stripe insertion card reader[e]	■	■	■	■	■	■
not shown	A61512	1	Adhesive strip for card slot	■	■	■	■	■	■
4	B61332	1	Reader wire harness	■	■	■	■	■	■
5	B61649	1	Harness clamp	■	■	■	■	■	■
6	See page 2–13	2	Reader electronics mounting screw	■	■	■	■	■	■
7	A61433	3	Bushing	■	■	■	■	■	■
8	B61439	2	Trim hole insert	■	■	■	■	■	■
9	B61326	1	Field wire harness	■	■	■	■	■	■
10	See page 2–13	4	Control electronics mounting screw	■	■	■	■	■	■
11	1805968	1	Cable clamp	■	■	■	■	■	■
12	B61327	1	Sensor and solenoid wire harness	■	■	■	■	■	■
13	B63022	1	Control electronics circuit board	■	■	■	■	■	■
14	D62104	1	35HW inside escutcheon *or*	■	■	■	■		
not shown	D62103	1	8KW/34HW inside escutcheon *or*	■	■	■	■	■	■
not shown	D62102	1	9KW inside escutcheon					■	■
15	See page 2–13	1	Lower escutcheon screw	■	■	■	■	■	■
16	See page 2–13	1	Upper escutcheon screw	■	■	■	■	■	■
17	C62520	1	#4 inside knob assembly[a] *or*	■	■	■	■		
(17)	A35454	1	#15 inside lever assembly[b] *or*	■	■	■	■		
not shown	B54707	1	# 4 plain knob[c] *or*					■	■
not shown	B55169	1	#15 plain lever handle[d]					■	■
not shown	C62520	1	#4 inside knob assembly[a] *or*	■	■	■	■		
18	B62128	1	Access door	■	■	■	■	■	■
19	See page 2–13	1	Access door screw (TORX with post head) *or*	■	■	■	■	■	■
not shown	See page 2–13	1	Access door screw (McGard head)	■	■	■	■	■	■

a. See the *H Series Service Manual* for other knob styles.
b. See the *H Series Service Manual* for other lever styles.
c. See the *8K Series Service Manual* for other knob styles.
d. See the *9K Series Service Manual* for other lever styles.
e. To order a weatherized card reader, use part number B61661.

SCREW KITS

Mounting screw kits

Kit name	Qty	Part number
Reader Electronics Mounting Screw Kit	25	1838621
Control Electronics Mounting Screw Kit	25	1839300

Upper escutcheon screw kits

Kit name	Qty	Part number
Upper Escutcheon Screw for 1 3/4″ Thick Doors Kit	25	1846978
Upper Escutcheon Screw for 2″ Thick Doors Kit	25	1847018
Upper Escutcheon Screw for 2 1/4″ Thick Doors Kit	25	1847050
Upper Escutcheon Screw for 2 1/2″ Thick Doors Kit	25	1847091
Upper Escutcheon Screw for 2 3/4″ Thick Doors Kit	25	1847133
Upper Escutcheon Screw for 3″ Thick Doors Kit	25	1847175

Lower escutcheon screw kits

Kit name	Qty	Part number
Lower Escutcheon Screw for 1 3/4″ Thick Doors Kit	10	1877702
Lower Escutcheon Screw for 2″Thick Doors Kit	10	1877744
Lower Escutcheon Screw for 2 1/4″ Thick Doors Kit	10	1876557
Lower Escutcheon Screw for 2 1/2″ Thick Doors Kit	10	1876599
Lower Escutcheon Screw for 2 3/4″ Thick Doors Kit	10	1876630
Lower Escutcheon Screw for 3″ Thick Doors Kit	10	1876672

Access door screw kits

Kit name	Qty	Part number
McGard Access Door Screw Kit	10	1839489
TORX Access Door Screw Kit	25	1839447

READER CONVERSION

Mortise or cylindrical reader conversion

If you want to convert the reader of an existing mortise or cylindrical IDH Max Lock, use the following table to determine the parts that you need. You will also need to replace the outside escutcheon gasket (A60725). The table includes only the parts that are different.

Note: You do not need to change the position of the DIP switches on the control electronics circuit board.

- By default, switches 1 through 5 are set to ON. These switches are for possible future applications.
- By default, switches 6 and 7 are set to ON for automatic baud rate detection. This setting lets you determine the baud rate for communication between the lock's control electronics circuit board and the panel interface module by setting DIP switches on the panel interface circuit board.
- Switch 8 is set to ON only for locks with a magnetic stripe insertion card reader; it is set to OFF for locks with a magnetic stripe swipe card reader.

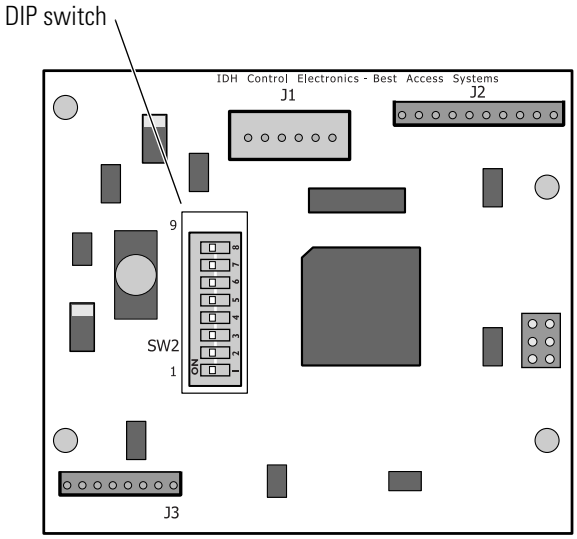


Figure 2.6 Location of the DIP switch on the control electronics circuit board

Caution

Before you handle the circuit board or any component on the circuit board, make sure that you are properly grounded using an electrostatic discharge (ESD) protection kit. Touching the circuit board without proper grounding can damage sensitive electronic components—even if you don't notice any static discharge.

Part type	Part No.	Description	Magnetic stripe card reader	HID proximity card reader	Motorola proximity card reader
Card reader	B63269	Magnetic stripe swipe card reader	■		
	B64404	HID proximity card reader with antenna		■	
	B64403	Motorola proximity card reader with reader assembly			■
Reader circuit board	B80901	Reader circuit board assembly for magnetic stripe swipe card readers	■		
	B80902	Reader circuit board assembly for proximity card readers		■	■

Tasks to perform for converting readers:

1. Remove the inside and outside escutcheons from the door. For mortise instructions, see page 3–12. For cylindrical lock instructions, see page 4–7.
2. Remove the existing card reader:
   - To remove the magnetic stripe swipe card reader, see page 5–11.
   - To remove the proximity card reader, see page 5–14.
3. Install the replacement card reader:
   - To install the magnetic stripe swipe card reader, see page 5–12.
   - To install the proximity card reader, see page 5–15.
4. Reinstall the inside and outside escutcheons on the door. For mortise lock instructions, see page 3–20. For cylindrical lock instructions, see page 4–15.

MORTISE CASE EXPLODED DIAGRAM

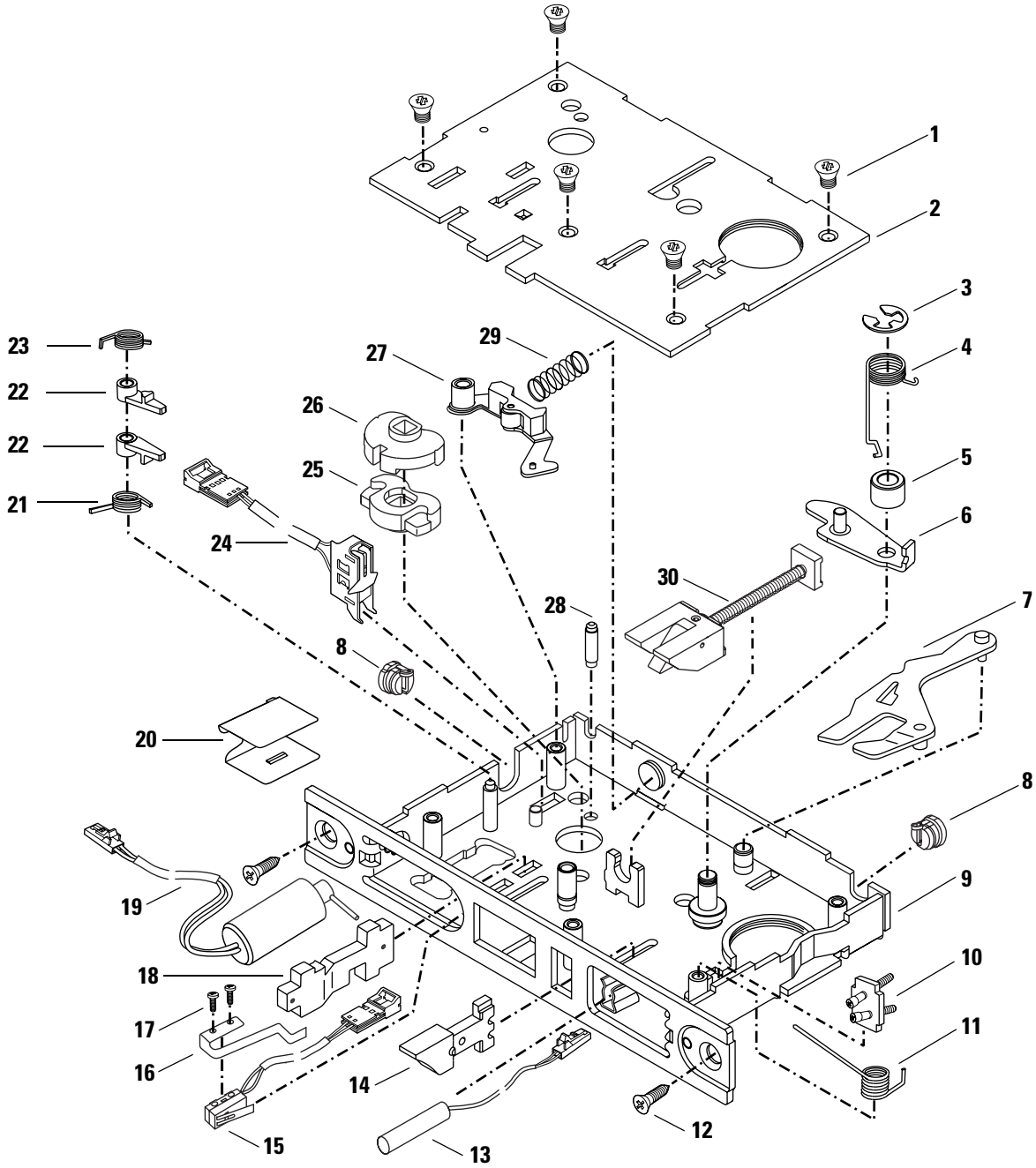


Figure 2.7 Mortise case exploded diagram (EEU function shown)

Mortise case parts list

Refer to Figure 2.7 and the table below to find the part you need.

Note: These parts are used in all IDH Max mortise functions.

Item	Part No.	Qty.	Description
1	A34087	5	Case cover mounting screw
2	D34316	1	Non-UL case cover
3	A34013	1	Retaining ring
4	A34072	1	Tumbler spring
5	A34068	1	Spacer
6	A35013	1	“E” latch lever and pin assembly
7	A35021	1	Deadlocking “E” tumbler assembly
8	A34236	2	Wire strain relief
9	B61340	1	Case
10	A35022	1	Cylinder clamp plate
11	A61226	1	Auxiliary bolt spring
12	A18724	2	Case mounting screw
13	A61328	1	Door status switch
14	B34092	1	Auxiliary bolt
15	B61227	1	Latch status switch
16	A61329	1	Latch status switch lever
17	A61250	2	Latch status switch screw
18	A61337	1	Modified locking bar
19	B61331	1	Solenoid assembly
20	B62041	1	Mortise case spacer
21	A34065	1	Lower auxiliary spring (35HW)
22	B34020	2	Auxiliary return lever (35HW)
23	A34066	1	Upper auxiliary spring (35HW)
24	A61330	1	RQE switch assembly
25	B34043	1	Inside hub
26	B34003	1	Outside hub
27	B35248	1	Short hub lever and pin assembly
28	A34048	1	Stop pin (35HW)
29	A34081	1	Hub lever spring
30	B35019	1	Latchbolt (lever) (35HW)
not shown	B35018	1	Latchbolt (knob) (34HW)
not shown	A24248	1	UL label

OTHER MORTISE LOCK COMPONENTS

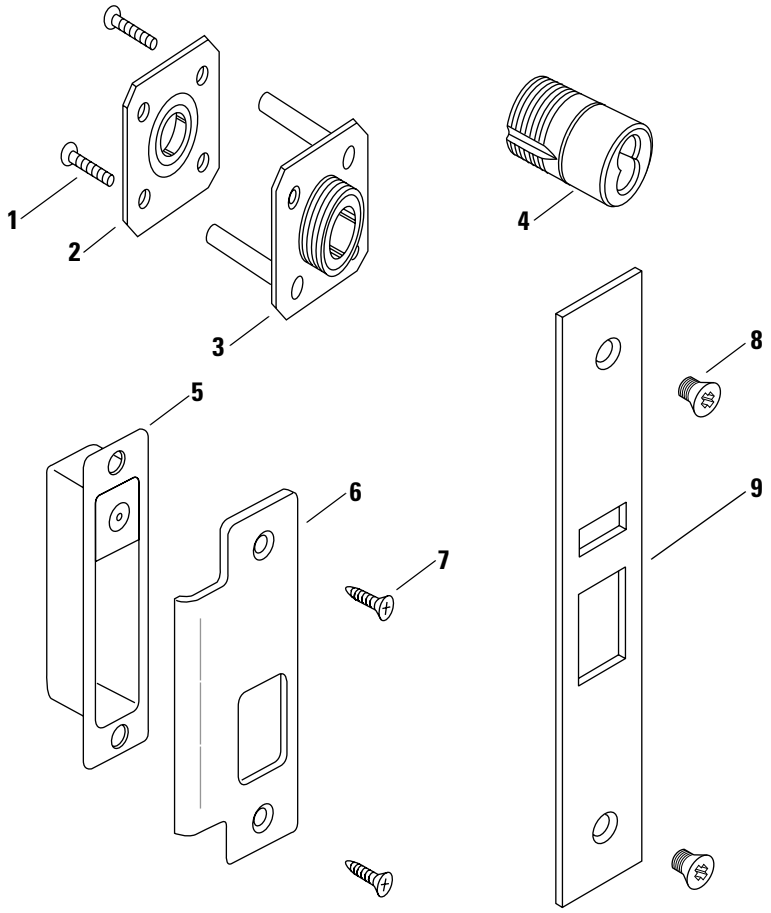


Figure 2.8 Mortise lock components

Other mortise lock components parts list

Refer to Figure 2.8 and the table below to find the part you need.

Item	Part no.	Qty.	Description
1	A18991	2	Mounting plate screw
2	B35030	1	Inside mounting plate
3	B35247	1	Outside mounting plate
4	B61341	1	Concealed cylinder for 1 3/4″–2″ thick doors[a] *or*
not shown	B61342	1	Concealed cylinder for 2 1/4″–2 1/2″ thick doors[a] *or*
not shown	B61343	1	Concealed cylinder for 2 3/4″–3″ thick doors[a]
5	B61224	1	Magnetized strike box
6	C29553	1	Strike plate for LH/RHRB *or*
not shown	C29552	1	Strike plate for RH/LHRB
7	A18724	2	Standard strike screw
not shown	A34450	2	Security strike screw
8	A18722	2	Standard faceplate screw *or*
not shown	A34454	2	Security faceplate screw
9	B34099	1	Faceplate

a. Required for EEU/EEL functions only.

CYLINDRICAL CHASSIS EXPLODED DIAGRAM

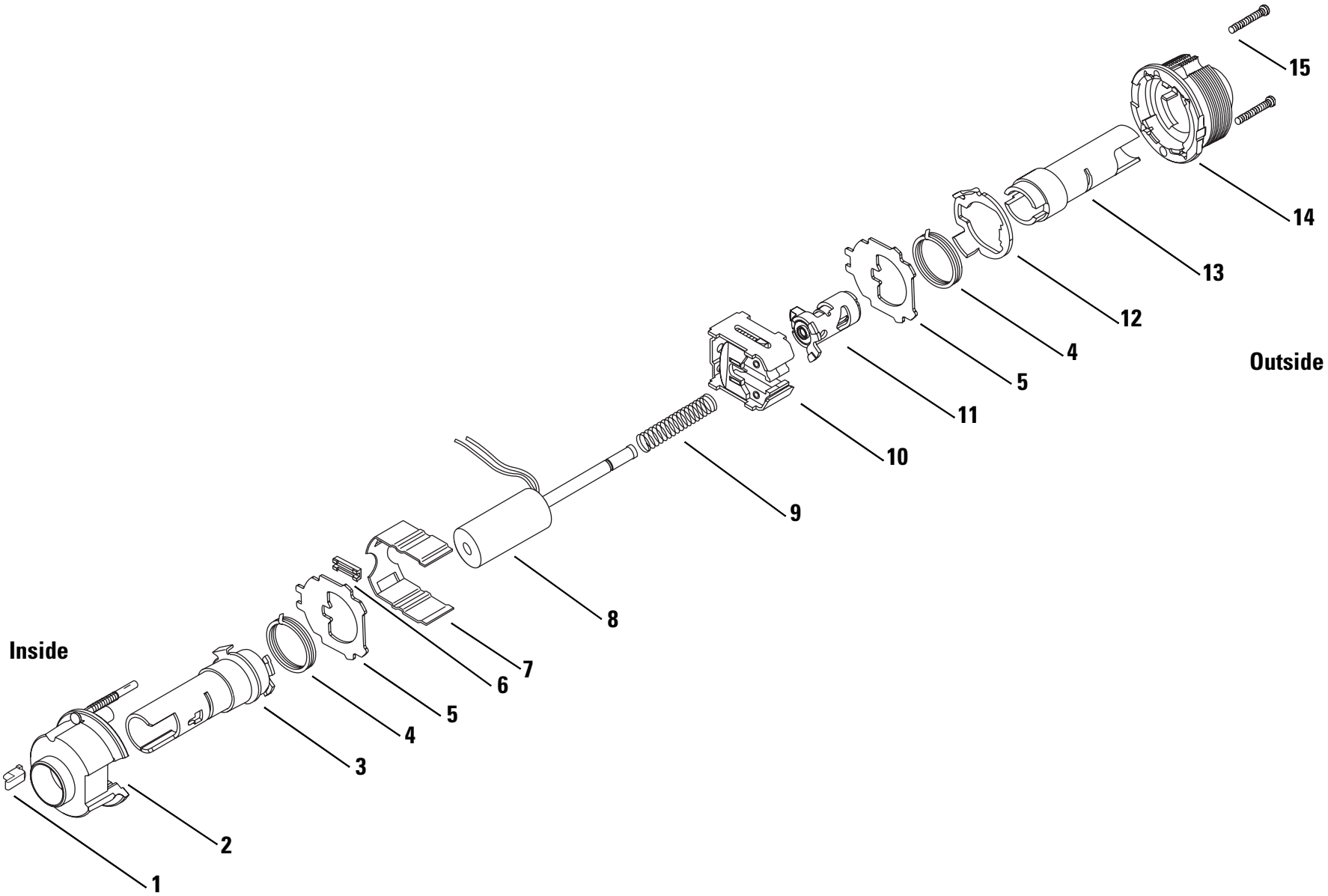


Figure 2.9 Cylindrical chassis exploded diagram (9K DDEU function shown)

Cylindrical chassis parts list

Refer to Figure 2.9 and the table below to find the part you need or to convert the function of the lock.

Item	Part no.	Qty.	Description	DDEU	DDEL
1	B60207	1	Switch plunger	■	■
2	C60206	1	Inside hub assembly for RQE	■	■
3	B60217	1	Modified drive collar & non-keyed sleeve assembly (9KW) *or*	■	■
not shown	B60234	1	Modified drive collar & non-keyed sleeve assembly (8KW)	■	■
4	B55518	2	Lever return spring (9KW) *or*	■	■
not shown	B60420	2	Knob return spring (8KW)	■	■
5	B55504	2	Thrust plate	■	■
6	B60470	1	Wire protector cap	■	■
7	B54172	1	Chassis cover	■	■
not shown	A60765	1	ID label (affixed to the chassis cover)	■	■
8	C61034	1	DDEL solenoid *or*		■
not shown	C61033	1	DDEU solenoid	■	
9	A60224	1	DDEL solenoid spring *or*		■
not shown	A60223	1	DDEU solenoid spring	■	
10	B60463	1	Chassis frame and retractor assembly	■	■
11	A60531	1	Key release cam assembly *or*	■	
not shown	A60541	1	Key release cam assembly		■
12	C55515	1	Spring drive plate	■	■
13	A55687	1	Keyed sleeve and driver assembly (9KW) *or*	■	■
not shown	A60424	1	Keyed sleeve assembly (8KW)	■	■
14	D55571	1	Outside hub *or*	■	■
not shown	D56003	1	Outside hub, lost motion	■	■
15	A55505	2	Chassis screw	■	■

OTHER CYLINDRICAL LOCK COMPONENTS

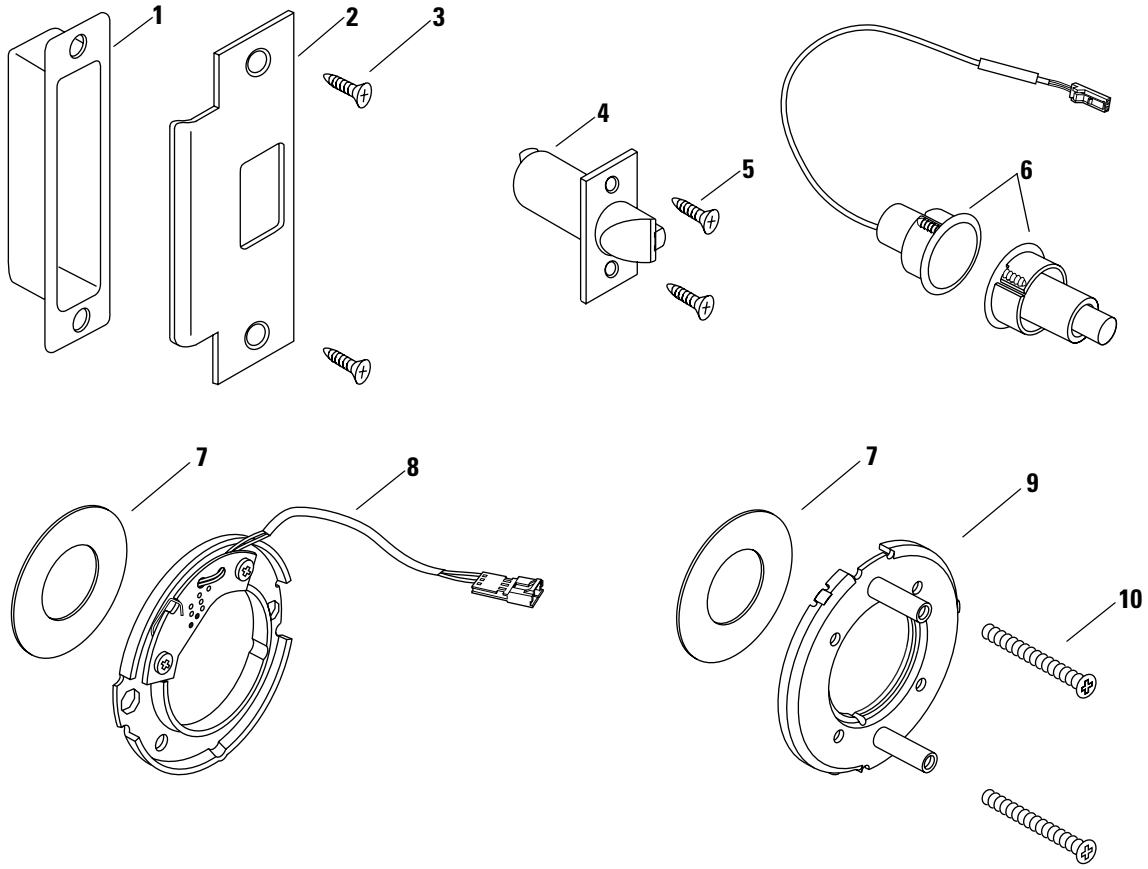


Figure 2.10 Cylindrical lock components

Other cylindrical lock components parts list

Refer to Figure 2.10 and the table below to find the part you need.

Item	Part no.	Qty.	Description
1	B34380	1	ANSI plastic strike box
2	B25641	1	ANSI strike plate
3	A18724	2	Screw for ANSI strike
4	C54680	1	Latch for 2 3/4″ backset
not shown	C51682	1	Latch for 3 3/4″ backset
not shown	C54684	1	Latch for 5″ backset
5	A25359	2	Latch screw
6	A60413	1	Door status switch and magnet assembly
7	A80775	2	Hub washer
8	B61049	1	Small RQE rose liner assembly
9	B55603	1	Small outside rose liner
10	B55557	2	Through-bolt screw

PANEL INTERFACE MODULE COMPONENTS DIAGRAM

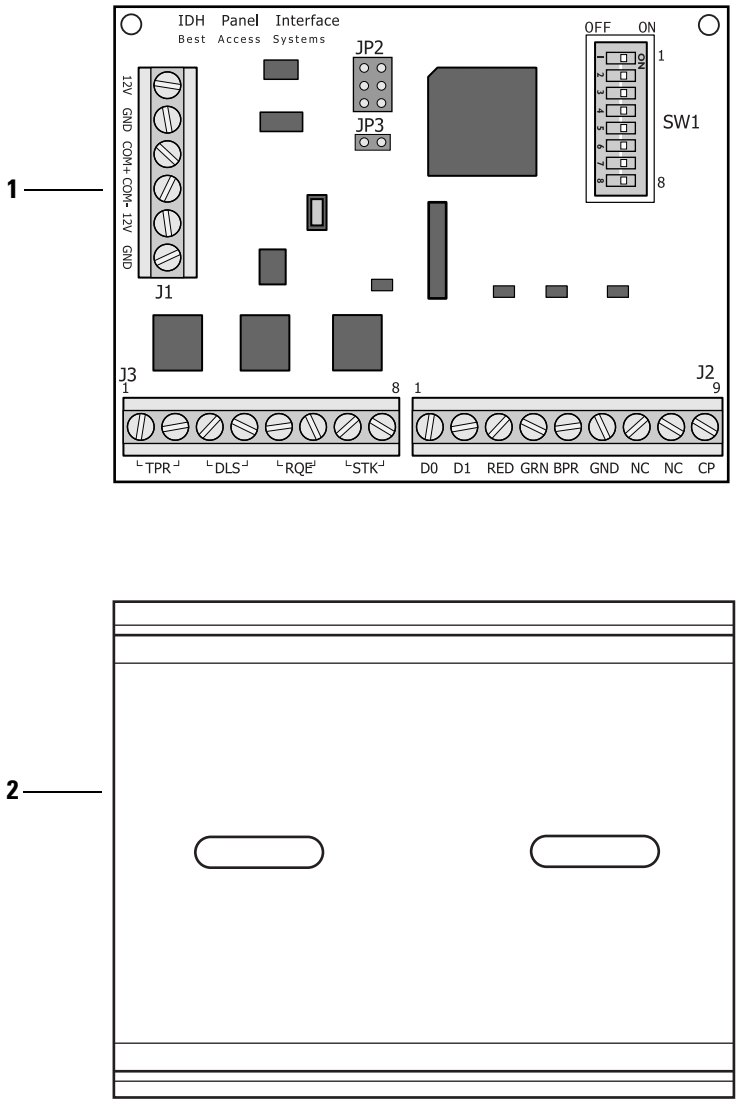


Figure 2.11 Panel interface module components

Panel interface module components parts list

Refer to Figure 2.11 and the table below to find the part you need.

Item	Part no.	Qty.	Description
1	B63023	1	Panel interface electronics
2	B61038	1	PIE mounting rail
1 & 2	B61036	2	Panel interface electronics *and* PIE mounting rail

3

SERVICE AND MAINTENANCE FOR MORTISE LOCKS

This chapter contains instructions for replacing IDH Max mortise components, and servicing and maintaining IDH Max mortise components.

If you need to…	See…
Remove components to service the lock	page 3-3
Replace a component	page 3-2
Change the hand and/or bevel	page 3-25
Change the function from electrically-locked to electrically-unlocked or from electrically-unlocked to electrically-locked	page 3-34
Replace a component inside the mortise case	page 3-35
Change a reader, wire harness, or panel interface module	Chapter 6

Note: When removing and replacing components, always test that the lock works properly when you're finished.

Caution

Before you perform any maintenance on your lock, make sure that you remove power from the lock.

Caution

Before you handle the circuit board or any component on the circuit board, make sure that you are properly grounded using an electrostatic discharge (ESD) protection kit. Touching the circuit board without proper grounding can damage sensitive electronic components—even if you don't notice any static discharge.

REPLACING COMPONENTS

To replace all of the components for IDH Max Mortise Locks, perform all of the tasks in the sections *Removing components* and *Reinstalling components*.

Also use these sections to replace individual components. Use the following table to determine which tasks to perform. For the tasks in the column *See these tasks to remove*, see the section *Removing components*, which starts on page 3–3. For the tasks in the column *See these tasks to reinstall*, see the section *Reinstalling components*, which starts on page 3–13.

To replace this component	See these tasks to remove	See these tasks to reinstall
Core	Task A (page 3–3)	Task H (page 3–23)
Inside and outside lever/knob	Task B (page 3–4)	Task G (page 3–21)
Access door	Task C (page 3–5)	Task I (page 3–24)
Outside escutcheon	Task A through Task D (page 3–3 through page 3–6)	Task E through Task I (page 3–17 through page 3–24)
Mortise case faceplate and cylinder	Task A through Task E (page 3–3 through page 3–10)	Task D through Task I (page 3–16 through page 3–24)
Mounting plates	Task A through Task F (page 3–3 through page 3–11)	Task C through Task I (page 3–15 through page 3–24)
Mortise case	Task A through Task G (page 3–3 through page 3–11)	Task B through Task I (page 3–14 through page 3–24)
Inside escutcheon	Task A through Task H (page 3–3 through page 3–12)	Task A through Task I (page 3–13 through page 3–24)

Removing components

Task A. To remove the core:

Note: Only EEL and EEU function locks have a core.

1. Insert the control key into the core and rotate the key 15 degrees to the right.
2. Remove the core from the cylinder.

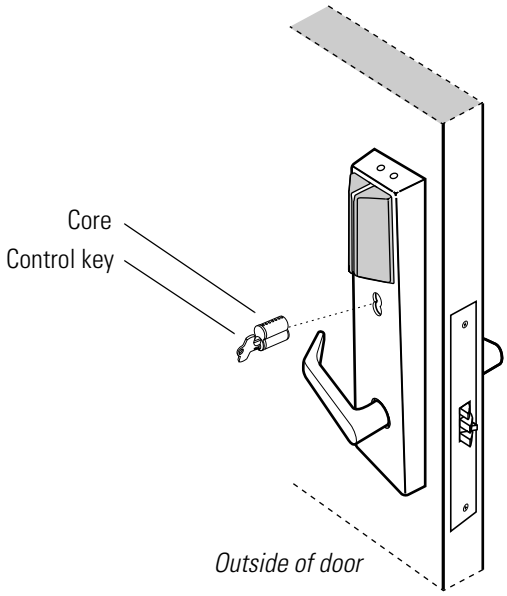


Figure 3.1 Removing the core

Task B. To remove the inside and outside levers/knobs:

1. Remove the set screw cap and use a 1/8″ Allen wrench to remove the set screw from the inside lever/knob.
2. Remove the inside lever/knob, then the outside lever/knob and spindle assembly from the door.

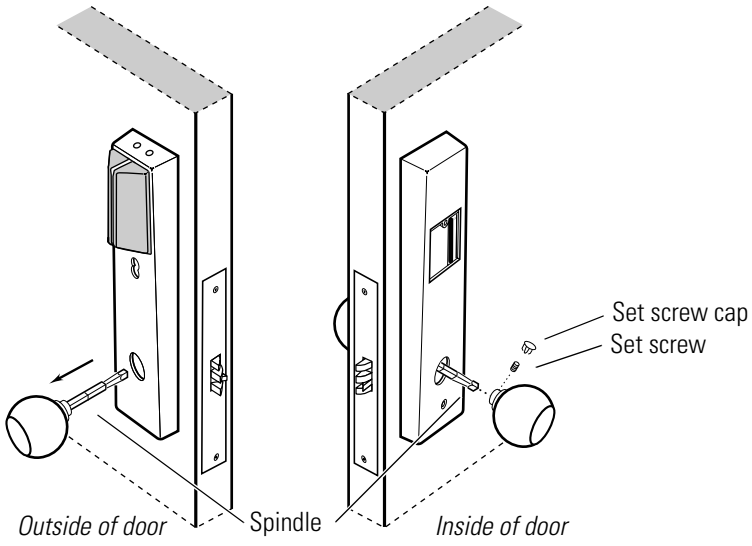


Figure 3.2 Removing the knobs

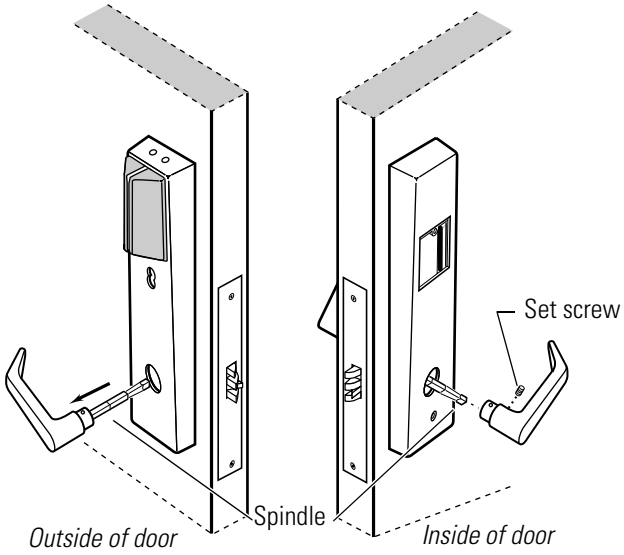


Figure 3.3 Removing the levers

Task C. To remove the access door:

1. Use the appropriate bit driver to remove the security screw from the access door.
2. Open the access door and remove it from the escutcheon.

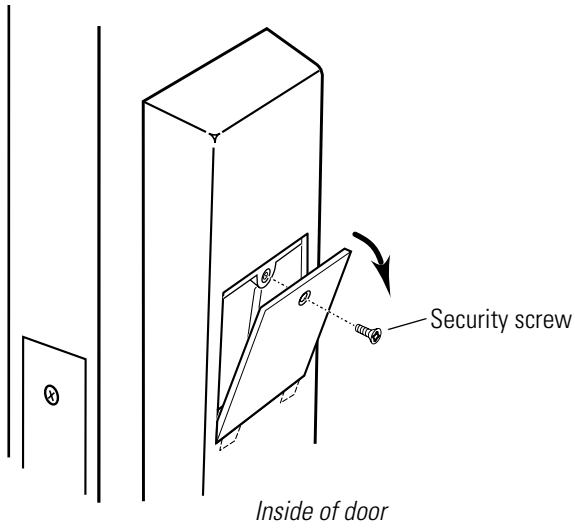


Figure 3.4 Removing the access door

Task D. To disconnect the connections and remove the outside escutcheon:

1. Remove the upper and lower escutcheon screws from the inside escutcheon. Pull the inside escutcheon away from the door enough to expose the control electronics circuit board.

   Note: You can let the inside escutcheon dangle from the field wire harness while completing Task D through Task H.

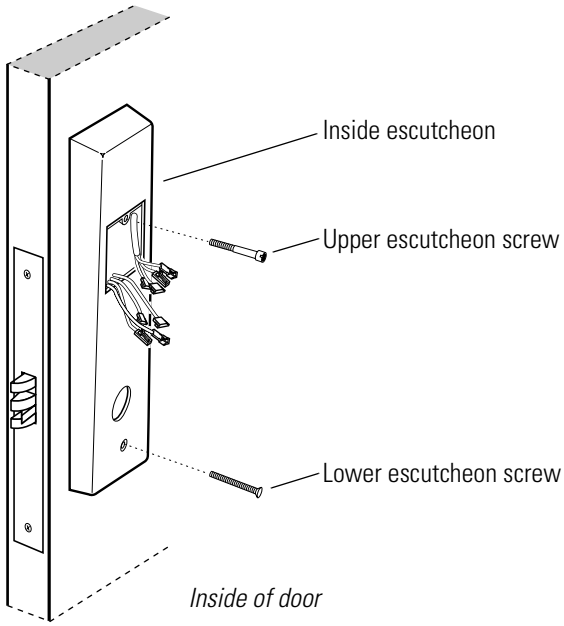


Figure 3.5 Removing the inside escutcheon

2. Disconnect the three sensor connections and solenoid connection.
3. Disconnect the reader wire harness from the control electronics circuit board.

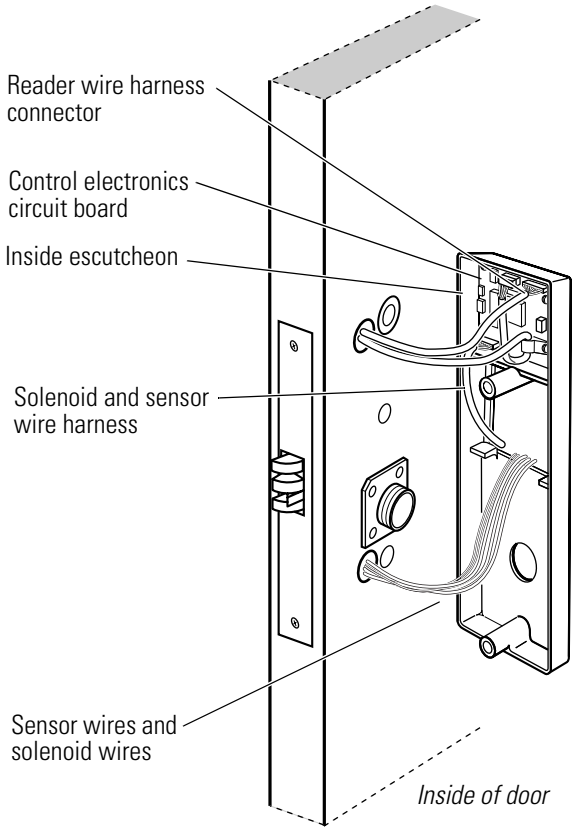


Figure 3.6 Disconnecting the wire harnesses

4. Remove the outside escutcheon from the door.

Caution

When removing the outside escutcheon, make sure that the reader wire harness is not rubbed across any sharp edges or over any surface that could damage its sleeving or wire insulation.

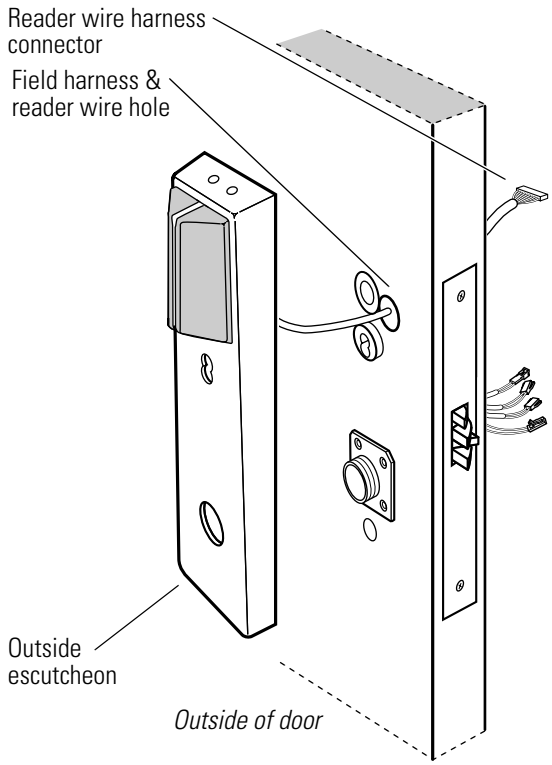


Figure 3.7 Removing the outside escutcheon from the door

5. Remove the bushings and trim hole inserts from each side of the door.

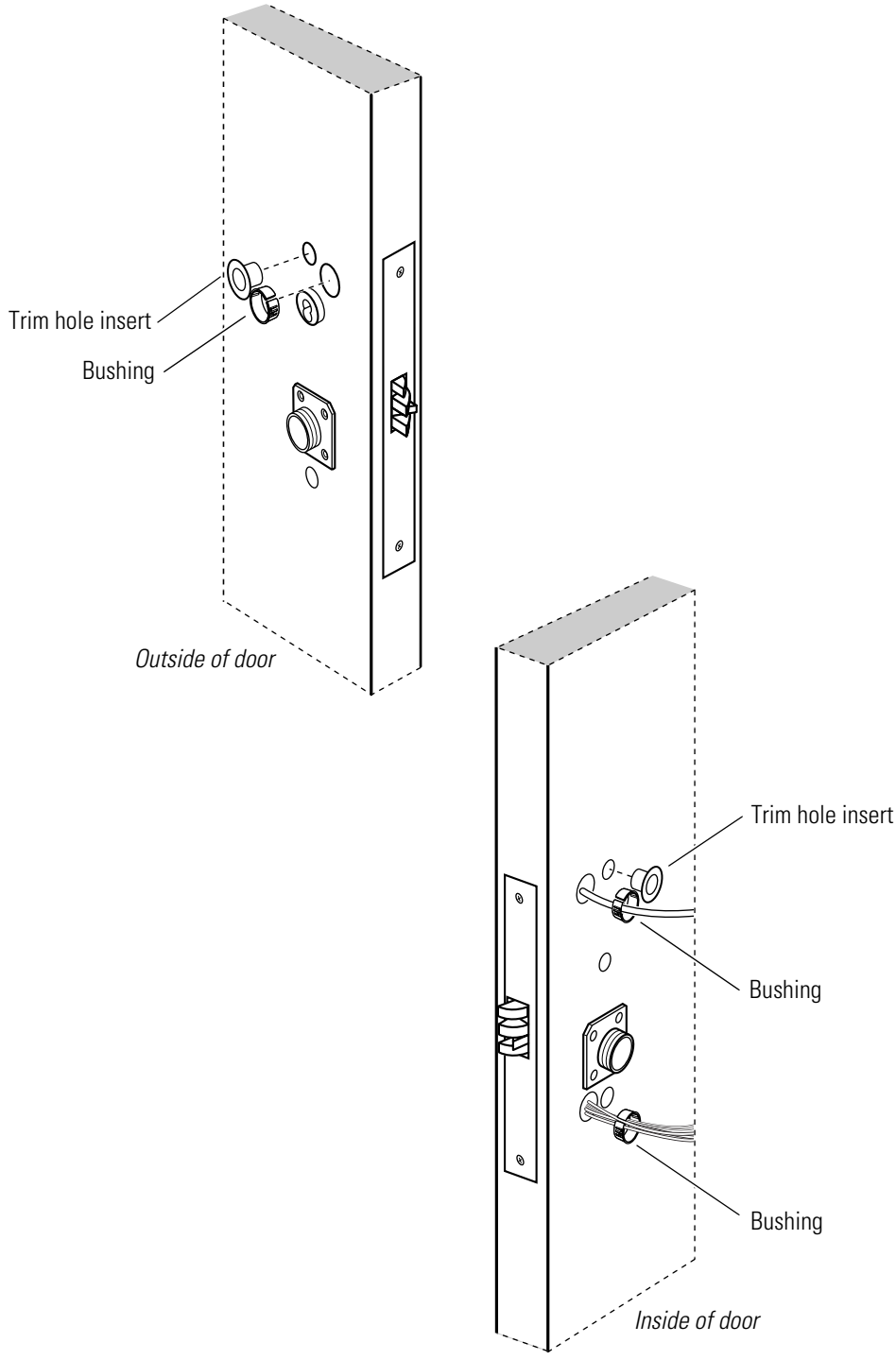


Figure 3.8 Removing the trim hole inserts and bushings from the door

Task E. To remove the mortise case faceplate and cylinder:

Note: Only EEL and EEU function locks have a cylinder.

1. Unscrew the two faceplate screws and remove the faceplate from the mortise case. Save the screws.
2. Loosen the cylinder clamp screw, located inside the mortise case.
3. Turn the cylinder counterclockwise until you can remove it.

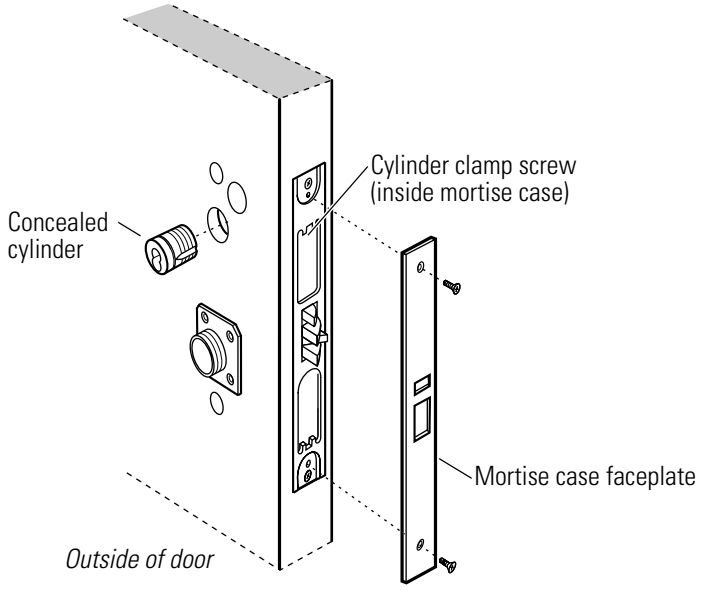


Figure 3.9 Removing the mortise case faceplate and cylinder

Task F. To remove the mounting plates:

1. Remove the two mounting plate screws from the inside of the door. Save the screws.
2. Remove the outside and inside mounting plates.

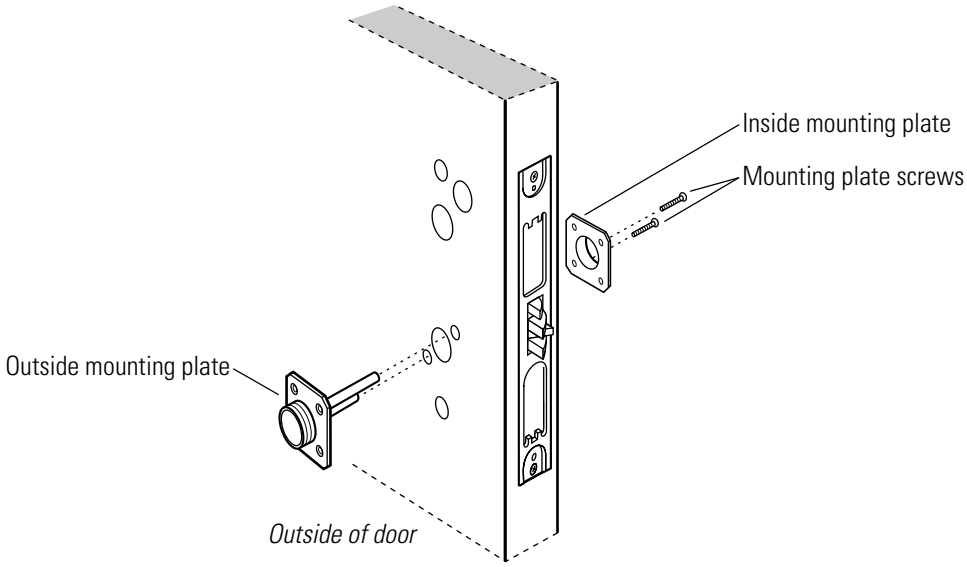


Figure 3.10 Removing the mounting plates

Task G. To remove the mortise case:

1. Remove the two case mounting screws.
2. Remove the mortise case from the door.

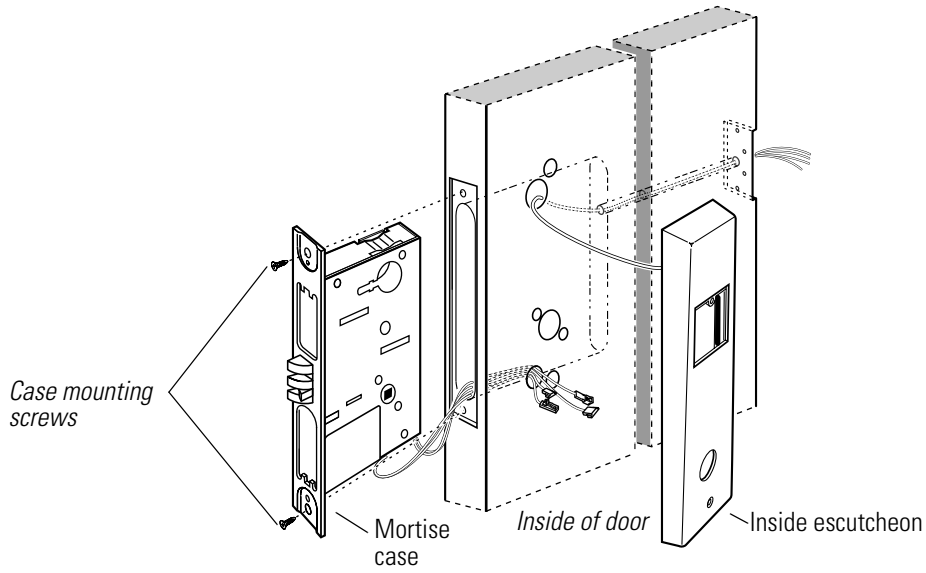


Figure 3.11 Removing the mortise case

Task H. To remove the inside escutcheon:

1. Remove the wire transfer hinge from the door and door frame.
2. Pull the wires and splice connectors out of the holes or pockets in the door and frame.
3. Disconnect the leads.

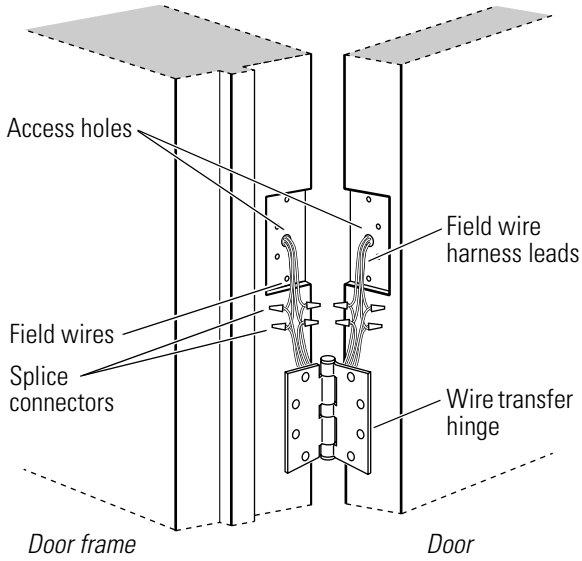


Figure 3.12 Disconnecting the field wire harness

4. Remove the inside escutcheon from the door and pull the field wire harness out of the door.

Caution

When removing the inside escutcheon, make sure that the field wire harness is not rubbed across any sharp edges or over any surface that could damage its sleeving or wire insulation.

Reinstalling components

Task A. To pull the field wire harness through the door:

1. Feed the field wire harness (connected to the inside escutcheon) into the field harness & reader wire hole and down into the mortise cavity.
2. From the hinge edge of the door, fish the field wire harness through the door to the hinge mortise.

   Note: You can let the inside escutcheon dangle from the field wire harness while completing Task A through Task F.

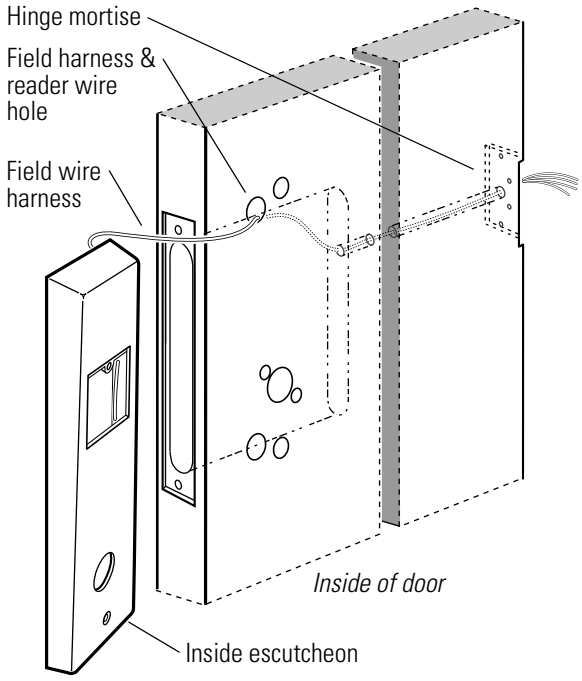


Figure 3.13 Pulling the field wire harness through the door

3. Trim the four leads of the field wire harness. Leave sufficient length to connect to the wire transfer hinge.
4. Splice the power and communication field wiring to the four pairs of leads on the frame side of the hinge, following the hinge manufacturer's instructions.

5. Splice the four field wire harness leads (listed in the table below) to the door side of the hinge, matching each pair of leads to its corresponding field wire.

Wire	Color
Ground	Black
12 VDC	Red
Com+	Orange
Com–	Green

6. Insert the wires and splice connectors into the holes or pockets in the door and frame, being careful not to pinch the wires. Install the wire transfer hinge.

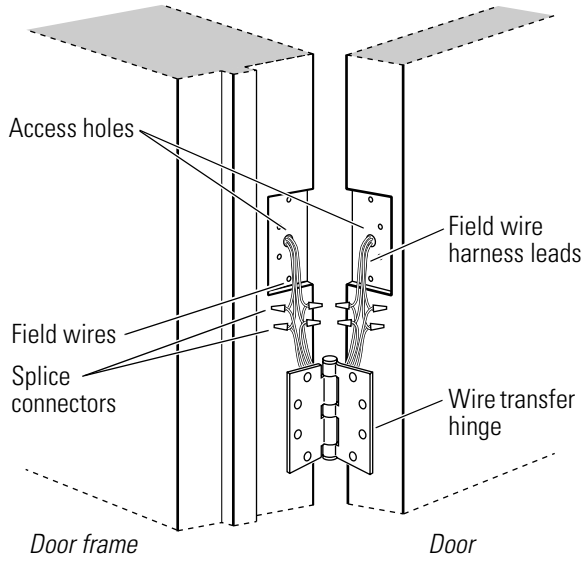


Figure 3.14 Reinstalling the wire transfer hinge

Task B. To reinstall the mortise case:

1. Insert the mortise case into the mortise cavity, while feeding the sensor and solenoid wires into the mortise cavity and out the sensor & solenoid wire hole to the inside of the door.

   Note: The field wire harness should be routed above and behind the mortise case (depending on where the hole through the door meets the mortise cavity).

2. Make sure there are 3″ to 4″ of slack in the field wire harness to allow access to the control electronics circuit board in the inside escutcheon.

3. Secure the mortise case with the case mounting screws.

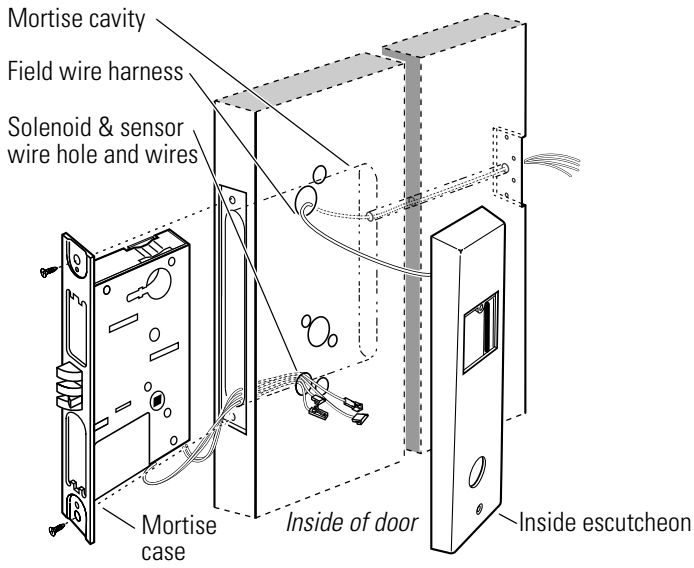


Figure 3.15 Reinstalling the mortise case

Task C. To reinstall the mounting plates:

1. Insert the outside mounting plate through the door and mortise case.
2. Position the inside mounting plate opposite the outside mounting plate and screw them securely in place.

Caution

Do not overtighten the mounting plate screws. Overtightening may compress the mortise cavity and bind the locking mechanism.

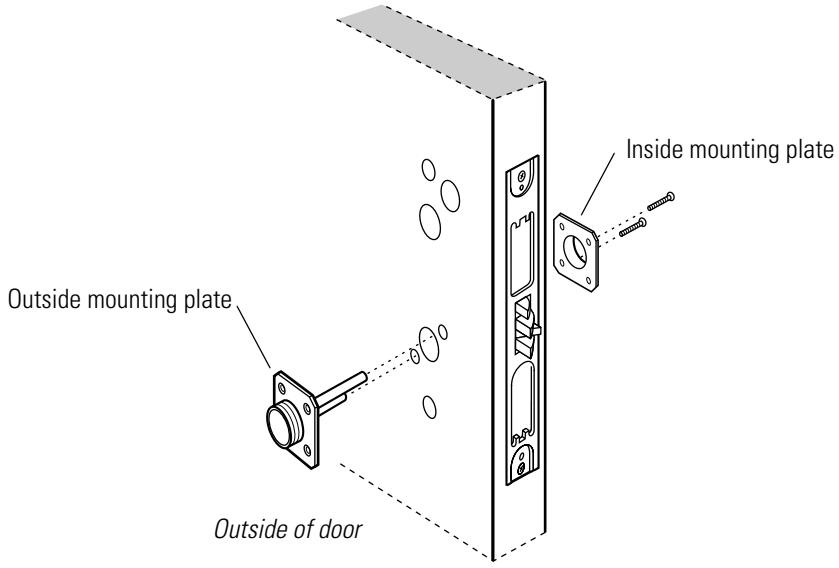


Figure 3.16 Reinstalling the mounting plates

Task D. To reinstall the cylinder and mortise case faceplate:

Note: Install the cylinder for EEL and EEU function locks only.

1. Thread the concealed cylinder into the mortise case so that the groove around the cylinder head is even with the door surface. Adjust the cylinder depth plus or minus one turn so that the core, when installed in the cylinder, is flush with the outer surface of the escutcheon.

A malfunction can occur if the cylinder is threaded in too far.

Caution

2. Secure the cylinder in the mortise case with the cylinder clamp screw.
3. Secure the mortise case faceplate to the mortise case with the faceplate mounting screws.
4. Check the cylinder and lock for proper operation.

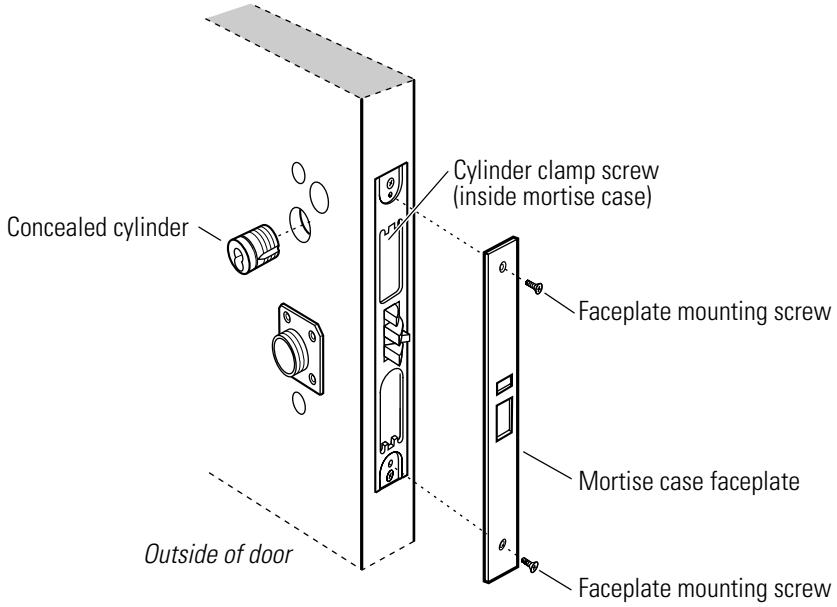


Figure 3.17 Reinstalling the cylinder and mortise case faceplate

Task E. To connect the reader wire harness:

1. Insert the two trim hole inserts into the upper trim hole on each side of the door.
2. Insert the two bushings into the field harness & reader wire hole on each side of the door.

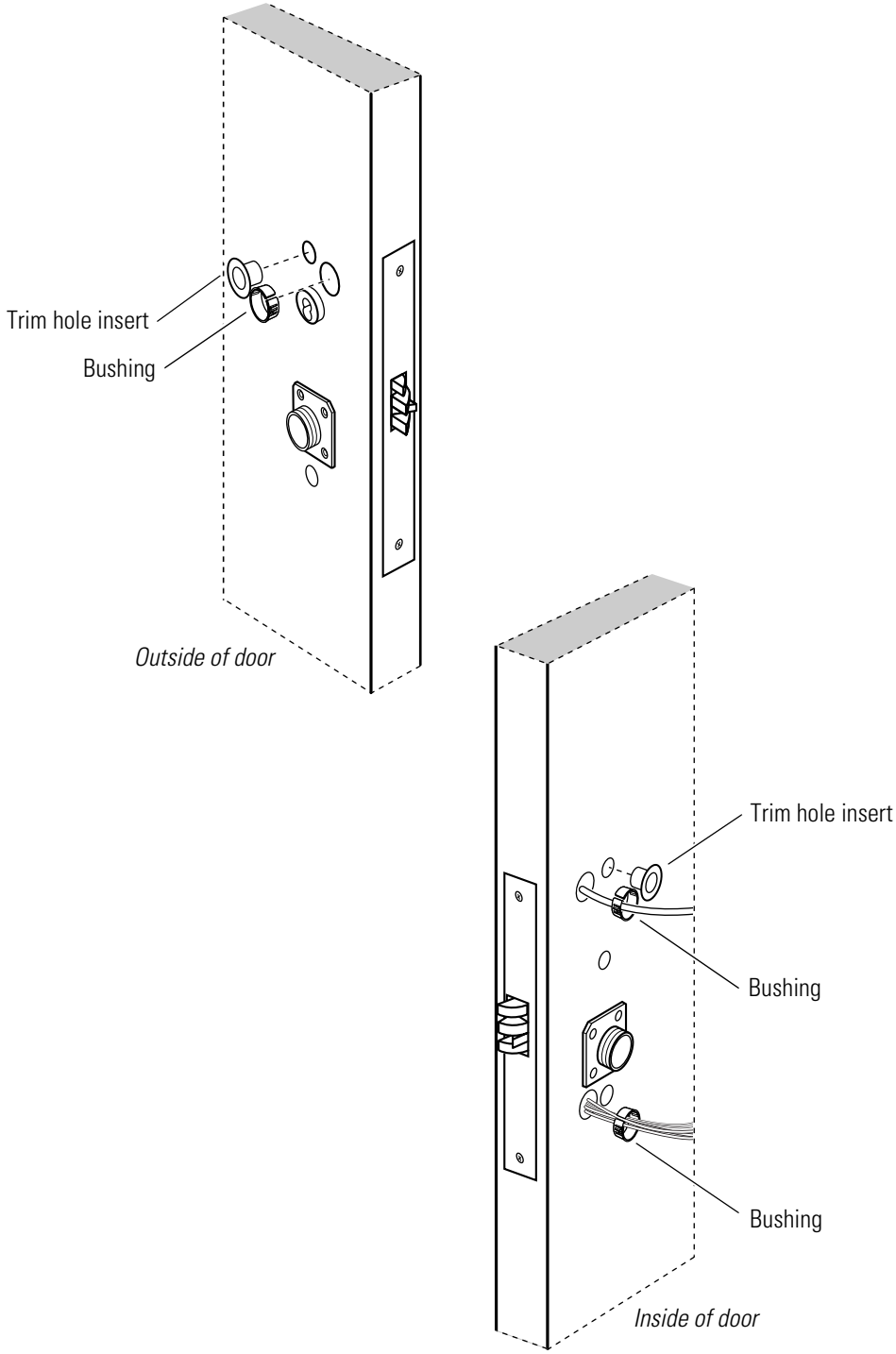


Figure 3.18 Reinstalling bushings and trim hole inserts

3. Insert a bushing into the sensor & solenoid wire hole on the inside of the door.
4. From the outside of the door, feed the reader wire harness connector through the field harness & reader wire hole.

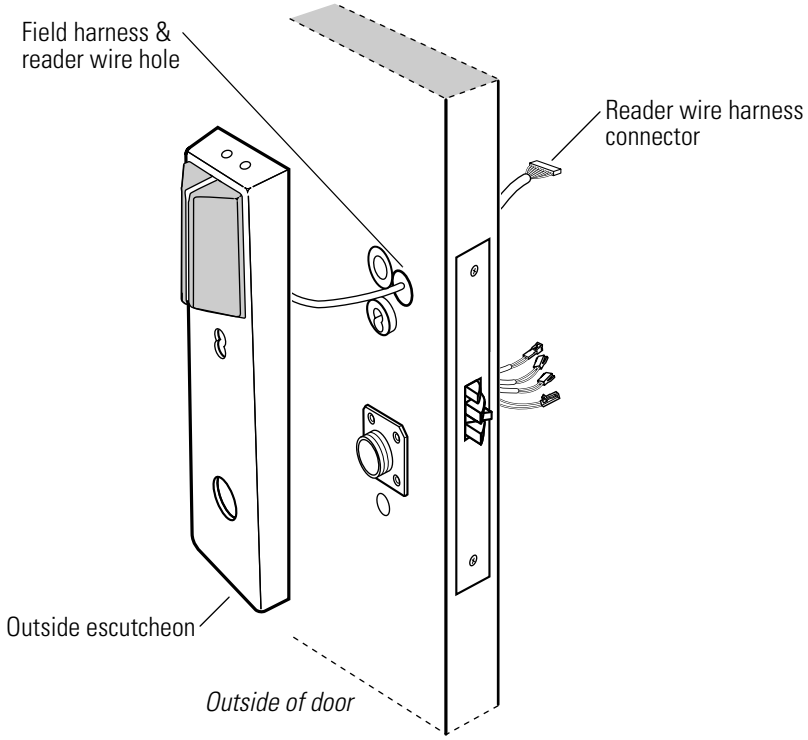


Figure 3.19 Feeding the reader wire harness connector through the door

5. Temporarily rest the outside escutcheon on the door by inserting the trim studs into the stud holes.

   Note: You can temporarily install the outside lever/knob to hold the outside escutcheon in place. See Task G on page 3–21.

6. Connect the reader wire harness to the control electronics circuit board in the inside escutcheon.
7. Feed the solenoid and sensor wire harness from the control electronics circuit board, as well as the solenoid and sensor wires from the mortise case, through the large opening in the inside trim.

Caution

When routing the reader wire harness, make sure the reader wire harness is not rubbed across any sharp edges or over any surface that could damage its sleeving or wire insulation.

Caution

When connecting the reader wire harness, make sure:

- *there are no loose wire connections where the wires are inserted into the reader wire connector*
- *the reader wire harness connector is fully seated in its mating connector on the control electronics circuit board.*

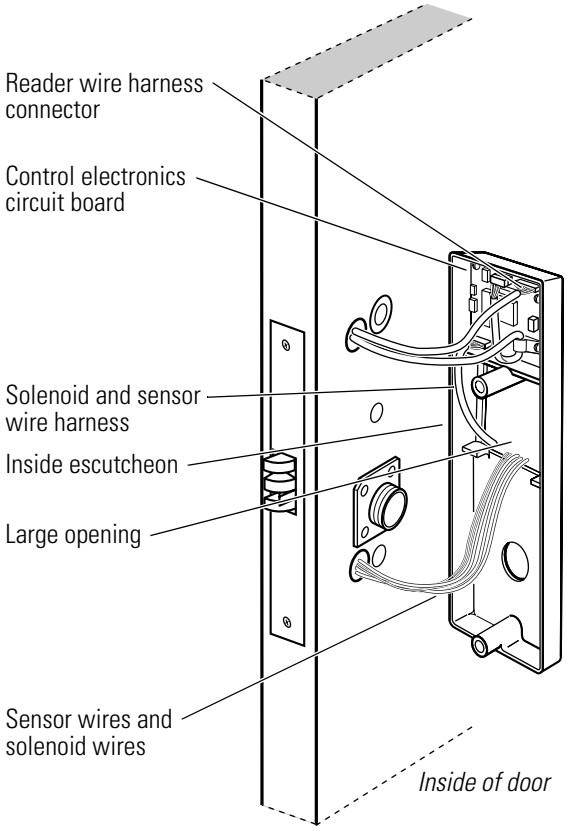


Figure 3.20 Connecting the reader wire harness to the control electronics circuit board

Task F. To secure the escutcheons and complete the connections:

1. Position the inside and outside escutcheons onto the door.
2. Making sure that the escutcheons do not pinch the wires, secure the escutcheons to the door—but do not tighten. Use the upper escutcheon screw at the top trim hole and the lower escutcheon screw at the bottom trim hole.

Caution

When routing the solenoid and sensor wire harness, the sensor wires, and the solenoid wires, make sure the wires are not rubbed across any sharp edges or over any surface that could damage their sleeving or wire insulation.

3. Make the solenoid connection and three sensor connections, and place the wires into the inside trim.

Wire connection	Color	No. of wires	No. of pins
Solenoid	Yellow	2	3
RQE	Brn/Org	2	3
Shorting connection	Purple	2	2
Door status sensor	White	2	2

Caution

When making the sensor connections and solenoid connection, make sure:

- *there are no loose wire connections where the wires are inserted into the sensor and solenoid connectors*
- *the sensor and solenoid wire harness connector is fully seated in its mating connector on the control electronics circuit board.*

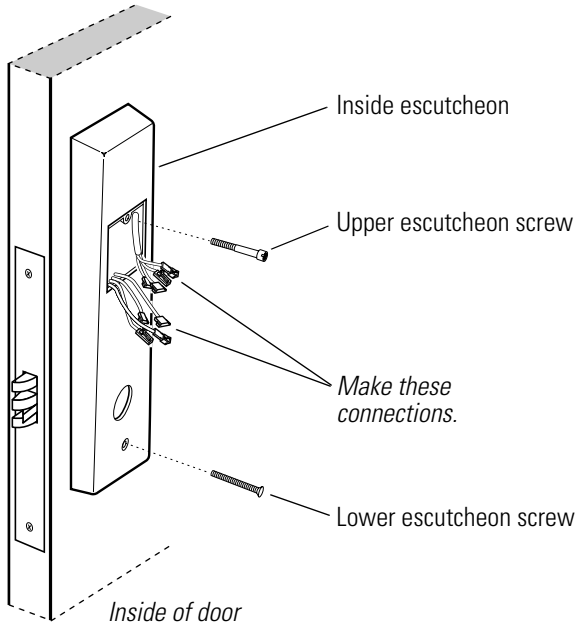


Figure 3.21 Securing the escutcheon and completing the connections

Task G. To reinstall the inside and outside levers/knobs:

For both knobs and levers

1. Unscrew the inside spindle one full turn to allow the spindles to turn freely.

For knobs

1. From the outside of the door, insert the outside knob and spindle assembly into the lock.
2. Slide the inside knob onto the inside spindle and secure it with the set screw.
3. Push the set screw cap into the set screw hole.
4. Tighten the upper and lower escutcheon screws.
5. Turn the knobs to check that they operate smoothly.

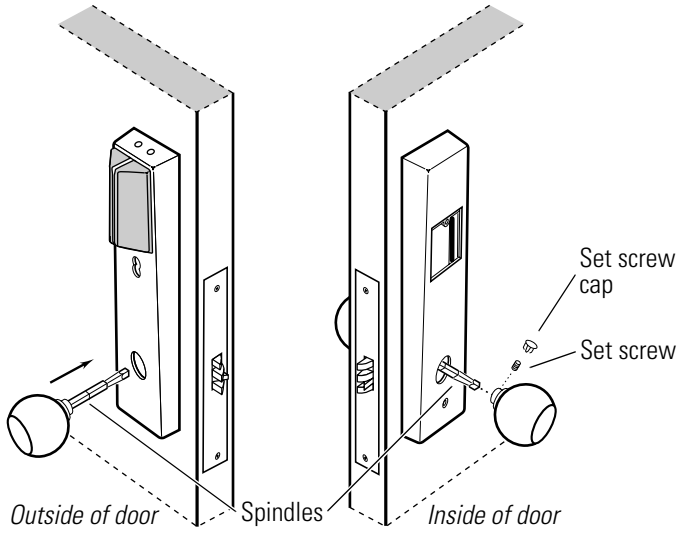


Figure 3.22 Reinstalling the knobs

For levers

1. With the handle pointing toward the door hinges, insert the outside lever and spindle assembly into the lock from the outside of the door.
2. Slide the inside lever onto the inside spindle and secure it with the set screw.
3. Tighten the upper and lower escutcheon screws.
4. Turn the levers to check that they operate smoothly.

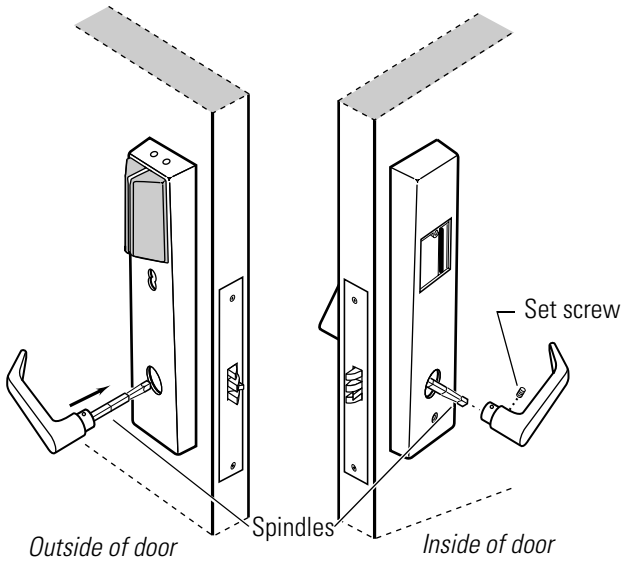


Figure 3.23 Reinstalling the levers

Task H. To reinstall the core (EEL and EEU only):

1. Insert the control key into the core and rotate the key 15 degrees to the right.
2. With the control key in the core, insert the core into the cylinder.

   Note: If the core does not insert easily into the cylinder, loosen the escutcheon screws and reposition the outside escutcheon. When the core is inserted fully, retighten the escutcheon screws.

3. Rotate the control key 15 degrees to the left and withdraw the key.

Caution

The control key can be used to remove cores and to access doors. Provide adequate security for the control key.

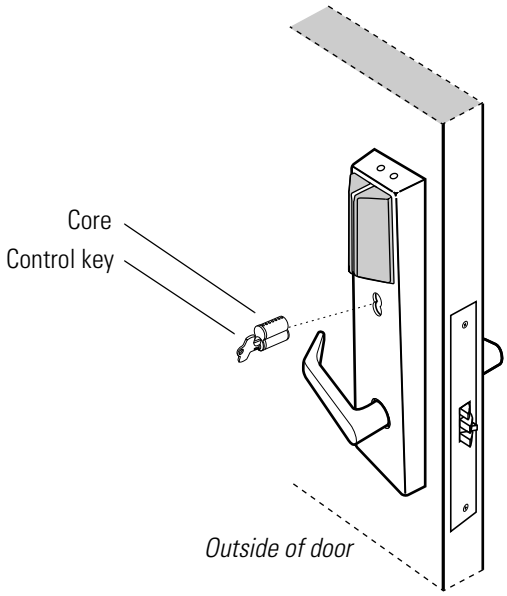


Figure 3.24 Reinstalling the core

Task I. To reinstall the access door:

1. Making sure that the access door does not pinch any wires, insert the tabs of the access door into its mating slots and swing the door closed.
2. Use the appropriate bit driver to secure the access door with the security screw. Tighten firmly.

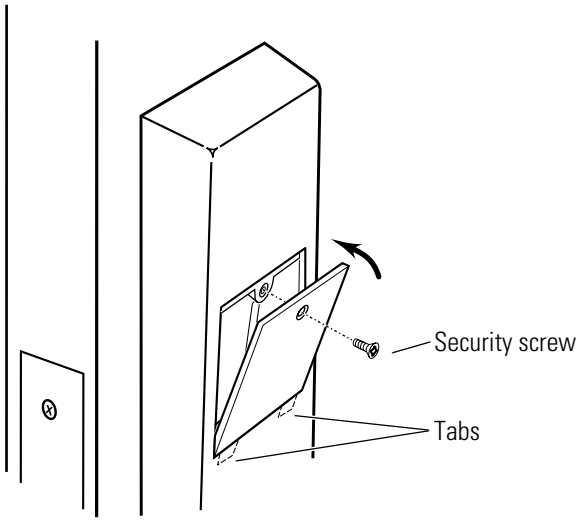


Figure 3.25 Reinstalling the access door

CHANGING THE HAND AND BEVEL FOR MORTISE LOCKS

This section describes how to change the hand and/or bevel of a mortise lock. The section includes a quick reference, outlines of the tasks required to change the hand and/or bevel, and detailed instructions for each task. Each outline references the detailed instructions for each task found in *Tasks for changing the hand and bevel*, which starts on page 3–28.

Changing hand and bevel quick reference

Review the diagram below to understand the hand and bevel of the door.

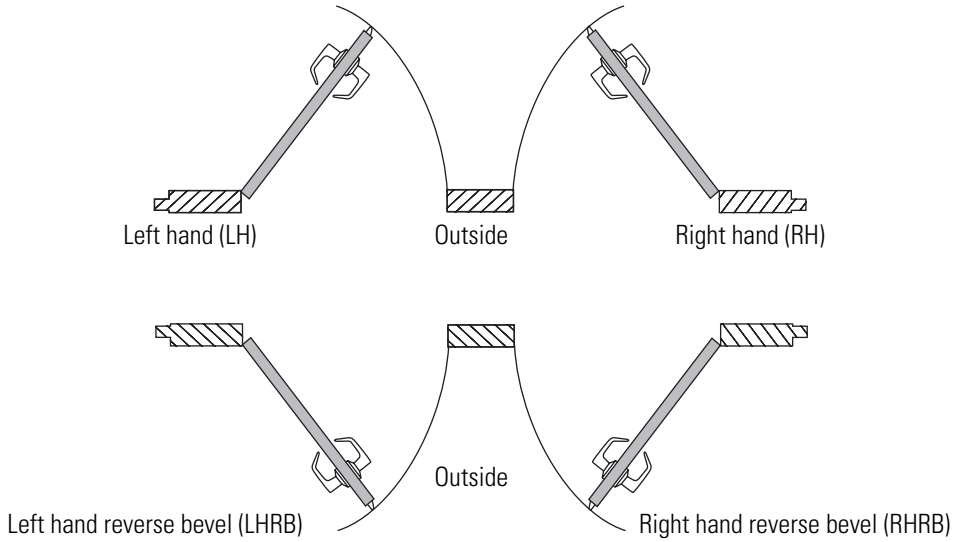


Figure 3.26 Explanation of the hand and bevel of the door

The following diagram and table show which components need to be turned over when changing the hand and bevel. See the sections that follow for instructions.

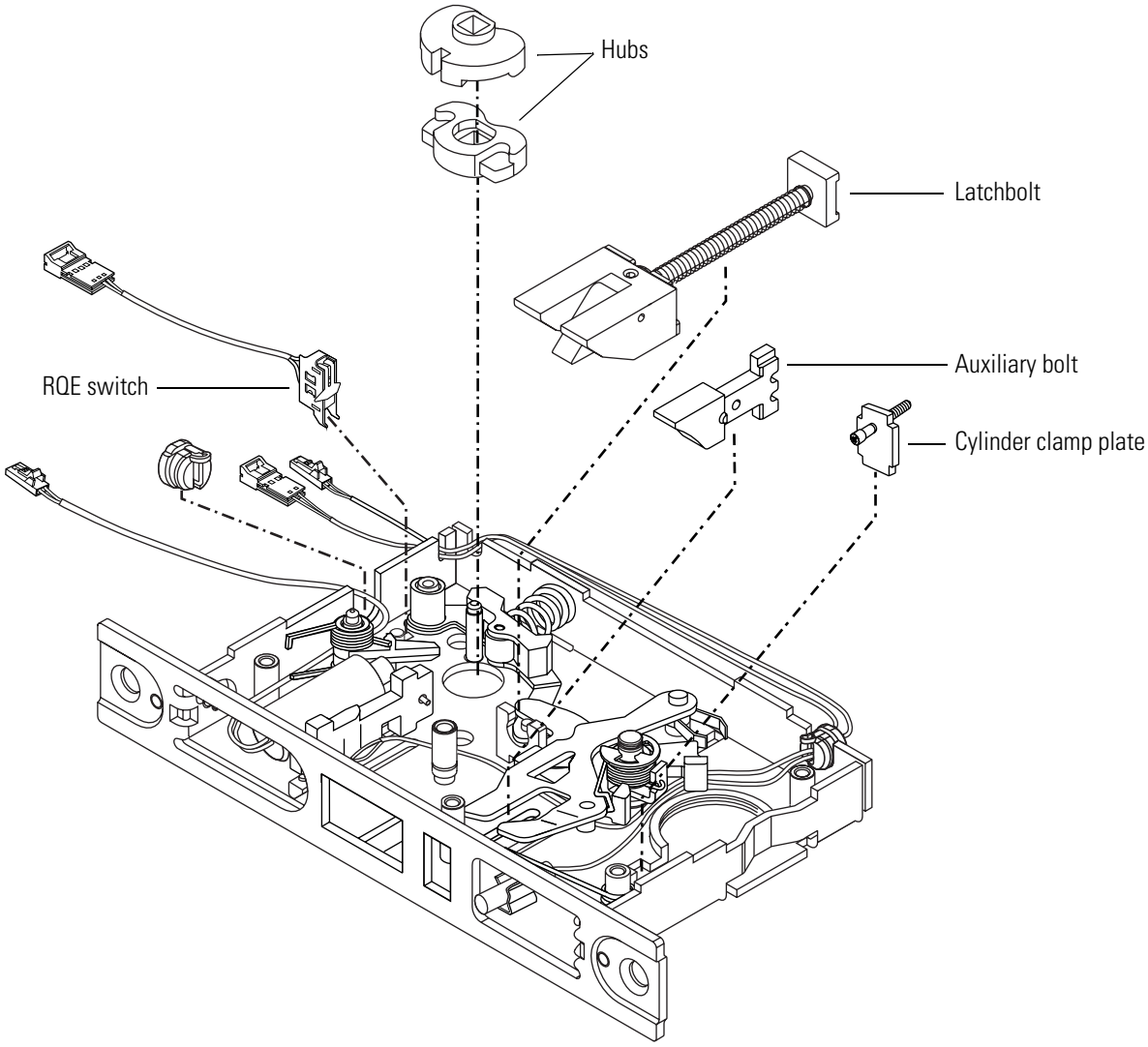


Figure 3.27 Overview of changing the hand and bevel (LHRB orientation shown)

- B represents the latchbolt and auxiliary bolt.
- H represents the hubs.
- C represents the cylinder clamp plate assembly.
- R represents the request-to-exit switch.

	LH	RH	LHRB	RHRB
LH		B/H/C/R	B	H/C/R
RH	B/H/C/R		H/C/R	B
LHRB	B	H/C/R		B/H/C/R
RHRB	H/C/R	B	B/H/C/R	

Changing the hand only with the RQE switch

Refer to the detailed instructions for each task that follows.

1. Remove the mortise case. See *Removing components* on page 3–3.
2. Perform *Task A. To remove the mortise case cover and case spacer* (page 3–28).
3. Perform *Task B. To remove and turn over the hubs* (page 3–28).
4. Perform *Task C. To turn over the RQE switch* (page 3–28).
5. Perform *Task D. To reinstall the hubs* (page 3–30).
6. Perform *Task E. To turn over the cylinder clamp plate* (page 3–31).
7. Perform *Task F. To turn over the auxiliary bolt* (page 3–31).
8. Perform *Task G. To turn over the latchbolt* (page 3–32).
9. Perform *Task H. To reinstall the mortise case cover and case spacer* (page 3–33).
10. Replace the mortise case. See *Reinstalling components* on page 3–13.

Changing the bevel only

Refer to the detailed instructions for each task that follows.

1. Remove the mortise case. See *Removing components* on page 3–3.
2. Perform *Task A. To remove the mortise case cover and case spacer* (page 3–28).
3. Perform *Task F. To turn over the auxiliary bolt* (page 3–31).
4. Perform *Task G. To turn over the latchbolt* (page 3–32).
5. Perform *Task H. To reinstall the mortise case cover and case spacer* (page 3–33).
6. Replace the mortise case. See *Reinstalling components* on page 3–13.

Changing the hand and bevel with the RQE switch

Refer to the detailed instructions for each task that follows.

1. Remove the mortise case. See *Removing components* on page 3–3.
2. Perform *Task A. To remove the mortise case cover and case spacer* (page 3–28).
3. Perform *Task B. To remove and turn over the hubs* (page 3–28).
4. Perform *Task C. To turn over the RQE switch* (page 3–28).
5. Perform *Task D. To reinstall the hubs* (page 3–30).
6. If the lock is single-keyed, perform *Task E. To turn over the cylinder clamp plate* (page 3–31).
7. Perform *Task H. To reinstall the mortise case cover and case spacer* (page 3–33).
8. Replace the mortise case. See *Reinstalling components* on page 3–13.

Tasks for changing the hand and bevel

Task A. To remove the mortise case cover and case spacer:

1. Set the mortise case on a flat surface.
2. *For mortise cases with a plastic case spacer*, remove the case spacer from the case. The plastic case spacer is tension mounted.

   For mortise cases with a metal case spacer, remove the case cover screw from the case spacer. Remove the case spacer.
3. Remove the case cover screws. There are five screws total.
4. Carefully remove the case cover. Many parts are spring loaded and may shift.

Task B. To remove and turn over the hubs:

1. Remove the top hub from the case, maintaining the hub's orientation.
2. Push the hub lever toward the side of the case and remove the bottom hub from the case. Maintain the hub's orientation.
3. Turn over the hubs.

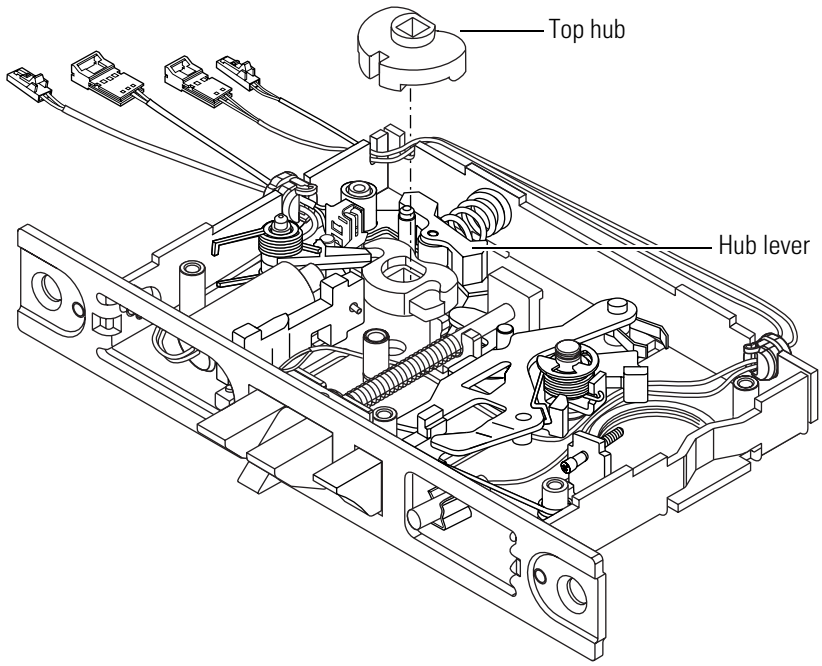


Figure 3.28 Turning over the hubs (LHRB orientation shown)

Task C. To turn over the RQE switch:

1. Pull the wire strain relief up and out of the case.
2. Tilt the RQE switch toward the middle of the case, then pull it up and out of the case.

3. Gently pull the switch bracket feet apart and remove the bracket from the switch.

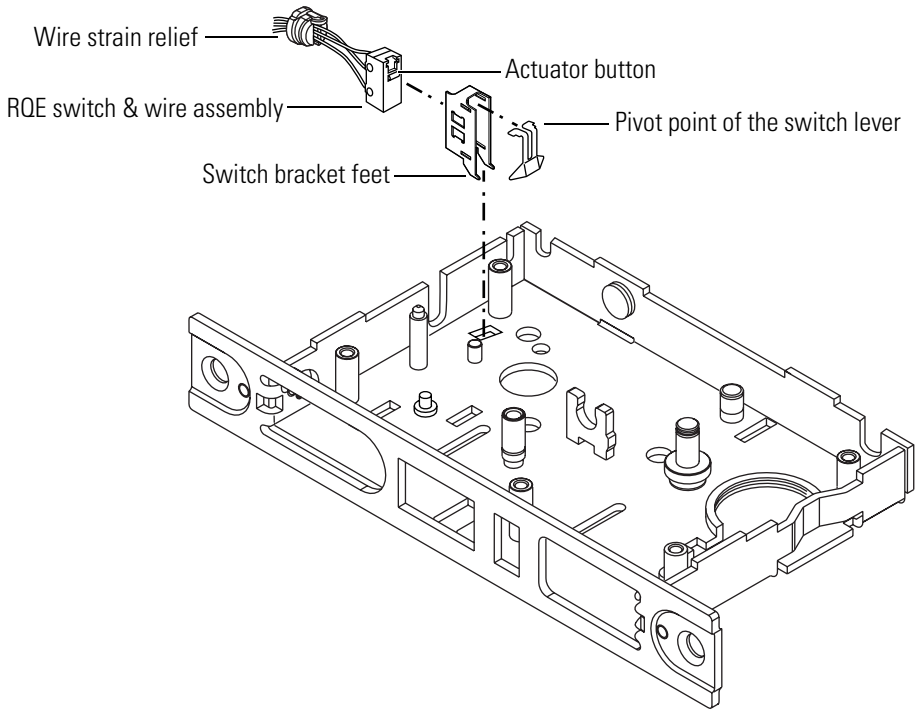


Figure 3.29 RQE switch assembly anatomy (LH orientation of RQE shown)

4. Reposition the switch lever. For RH/RHRB, the switch lever pivots at the bottom of the bracket (near the feet). For LH/LHRB, the switch lever pivots at the top of the bracket.

5. Position the bracket so that the RQE actuator button is on the same end as the pivot point of the switch hub lever. Gently bend the bracket feet apart and slide the bracket forward on the switch until the bracket tabs enter the two switch mounting holes.

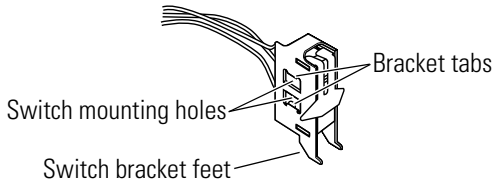


Figure 3.30 Assembled RQE switch assembly

6. Clamp the wires in the strain relief. Slide the strain relief into position on the case. It should lock into place.
7. Tilt the RQE switch forward and slide it into place in the case.

Task D. To reinstall the hubs:

1. Push the hub lever toward the side of the case and slide the now bottom hub under the auxiliary levers.
2. Insert the now top hub onto the bottom hub.

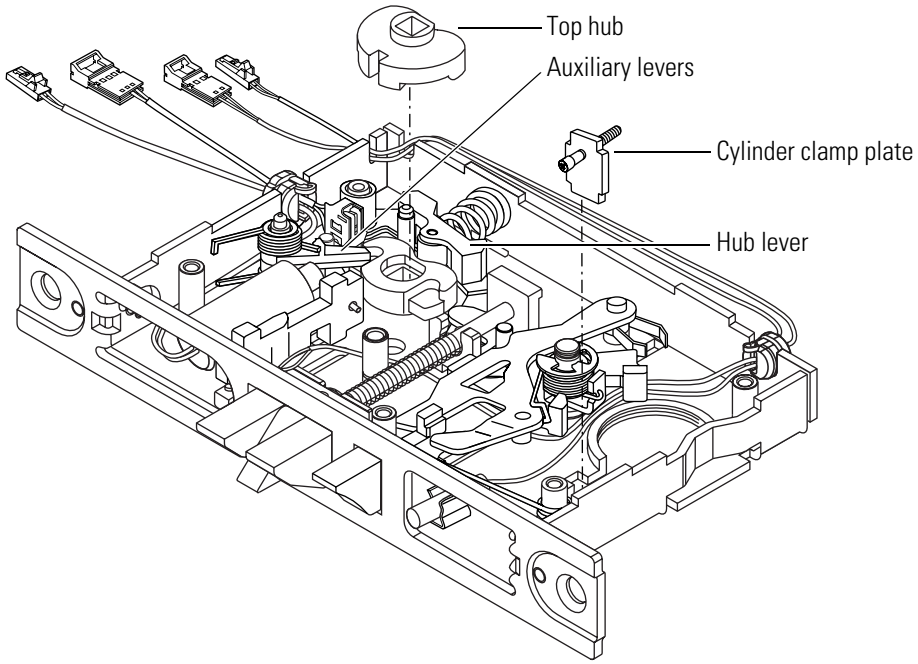


Figure 3.31 Turning over the hubs and cylinder clamp plate (LHRB orientation shown)

Note: The flat side of the outside hub should be opposite the pivot point on the RQE switch, as shown in Figure 3.32.

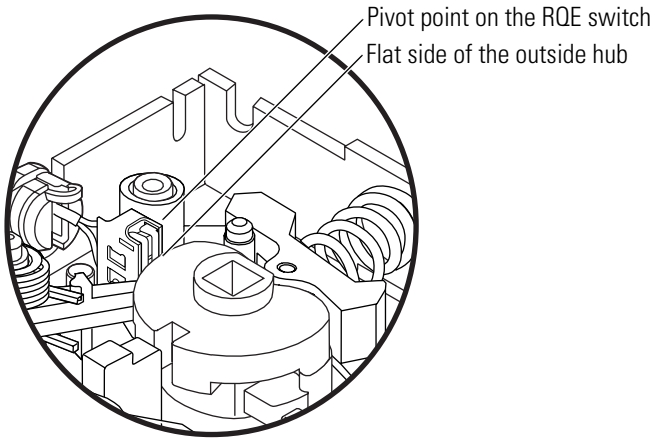


Figure 3.32 RQE switch and hub orientation (closeup)

Task E. To turn over the cylinder clamp plate:

If the lock is single-keyed, turn over the cylinder clamp plate and insert it in the case. See Figure 3.31.

Note: The screw must be on the same side of the lock case as the mortise cylinder.

Task F. To turn over the auxiliary bolt:

1. Remove the auxiliary bolt spring.
2. Remove the auxiliary bolt from the case and turn it over.
3. Insert the auxiliary bolt into the case. The angled portion of the bolt should be pushed through the front of the case and the feet should be resting in the slot.
4. Place the long, straight end of the auxiliary bolt spring into the hole on the auxiliary bolt. The center of the spring coil should rest around the screw post.

5. Press the L-shaped end of the spring so that the center of the spring can slide to the bottom of the screw post. The spring tension should push the bolt toward the front of the case.

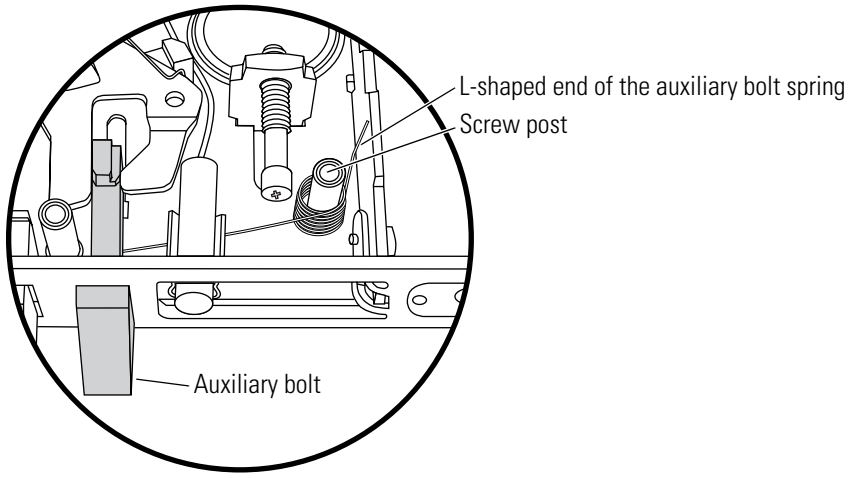


Figure 3.33 Turning over the auxiliary bolt (closeup)

Task G. To turn over the latchbolt:

1. Slide the brass grommet on the latchbolt away from the U-shaped latchbolt rod support. Grasp the latchbolt by the square-shaped tail and pull the latchbolt up and out of the case.
2. Turn over the latchbolt and rotate the anti-friction latch lever into position. Place the latchbolt in the case.

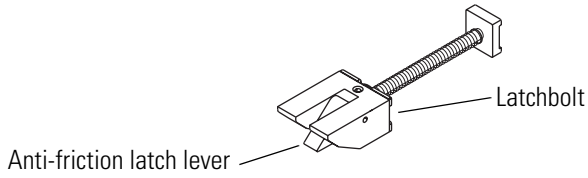


Figure 3.34 Latchbolt with anti-friction latch lever in position

3. Slide the brass grommet on the latchbolt away from the U-shaped latchbolt rod support. Rest the latchbolt rod into the U-shaped support. Release the grommet. It should snap into place.

   Note: If you can pull the square-shaped tail out of the rod support, the latchbolt is not placed properly. Reposition the latchbolt.

4. Make sure that the tumbler spring rests against the “E” tumbler.

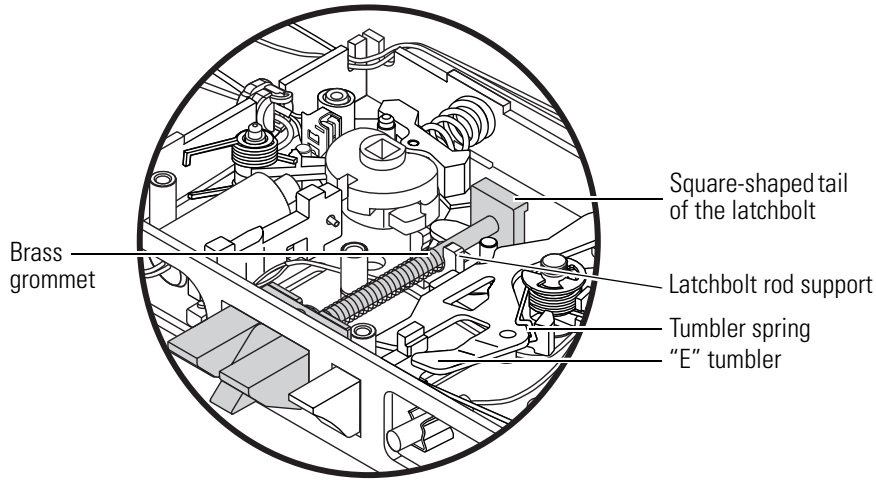


Figure 3.35 Turning over the latchbolt (closeup, LHRB orientation shown)

Task H. To reinstall the mortise case cover and case spacer:

1. Place the case cover on the mortise case.
2. *For mortise cases with a plastic case spacer*, install the five case cover screws.

   For mortise cases with a metal case spacer, install four of the case cover screws. Do not install the screw that holds the case spacer in place.

3. *For mortise cases with a plastic case spacer*, make sure that all of the wires exiting the mortise case are routed through the raised loop on the case spacer.

   Snap the plastic case spacer into position on the mortise case. Make sure that the wires are flat against the case and the connectors are routed toward the armored front of the case.

   Note: The plastic case spacer helps prevent pinching and nicking of the wires during installation of the trim.

   For mortise cases with a metal case spacer, position the case spacer on the mortise case and install the remaining case cover screw.

REVERSING THE SOLENOID WHEN CHANGING THE FUNCTION

To change an electrically-locked function mortise lock to the corresponding electrically-unlocked function, or to change an electrically-unlocked function to the corresponding electrically-locked function, you must flip the solenoid.

To flip the solenoid for mortise locks, perform the following steps.

1. Remove the mortise case. See *Removing components* on page 3-3.
2. Remove the mortise case cover and spacer. See *Task A. To remove the mortise case cover and case spacer:* on page 3-28.
3. Grasp the locking bar and rotate it. The solenoid plunger rotates with it.
4. Remove the locking bar from the solenoid pin.
5. Flip the solenoid and insert the pin of the solenoid plunger into the hole on the locking bar.

   Note: The solenoid rests in an opening in the case and is held in place by the case cover.
6. Rotate the solenoid and locking bar into place. See Figure 3.36.

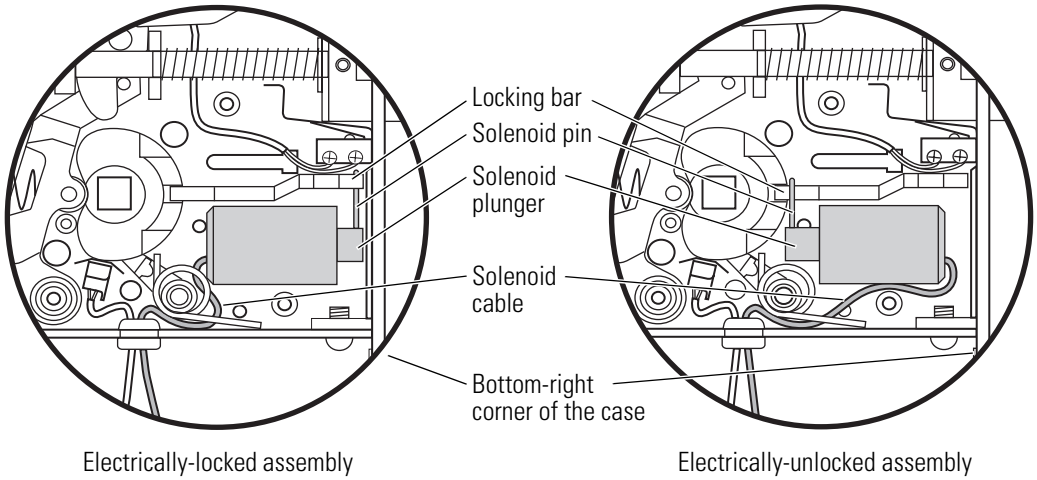


Figure 3.36 Reversing the solenoid

7. Make sure that the solenoid wires or cable is not pinched.
8. Reinstall the mortise case cover and case spacer. See *Task H. To reinstall the mortise case cover and case spacer:* on page 3-33.
9. Reinstall the mortise case. See *Reinstalling components* on page 3-13.

REPLACING MORTISE CASE COMPONENTS

Replacing the solenoid

Removing the solenoid

1. Remove the mortise case. See *Removing components* on page 3–3.
2. Remove the mortise case cover and spacer. See *Task A. To remove the mortise case cover and case spacer:* on page 3–28.
3. Remove the wire strain relief from the case.
4. Open the wire strain relief and remove the solenoid wires or cable.
5. Grasp the locking bar and rotate it. The solenoid plunger will rotate with it.
6. Remove the locking bar from the solenoid pin.
7. Remove the solenoid from the case. Remember the orientation of the solenoid.

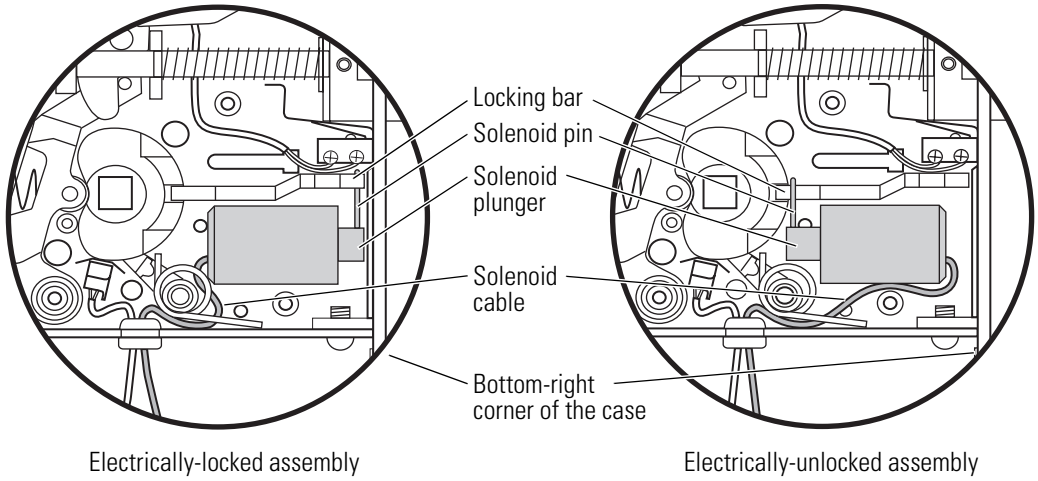


Figure 3.37 Removing and replacing the solenoid

Reinstalling the solenoid

1. Insert the new solenoid in the case.

   Note: The solenoid rests in an opening in the case and is held in place by the case cover.

2. Insert the pin of the solenoid plunger into the hole on the locking bar.
3. Rotate the solenoid and locking bar into place.
4. Make sure that the solenoid wires or cable is not pinched.
5. Clamp the solenoid wires or cable in the strain relief. Slide the strain relief into position on the case. It should lock into place.
6. Reinstall the mortise case cover and case spacer. See *Task H. To reinstall the mortise case cover and case spacer:* on page 3–33.

7. Reinstall the mortise case. See *Reinstalling components* on page 3–13.

Replacing the RQE switch

Removing the RQE switch

1. Remove the mortise case. See *Removing components* on page 3–3.
2. Remove the mortise case cover and spacer. See *Task A. To remove the mortise case cover and case spacer:* on page 3–28.
3. Remove the wire strain relief from the case.
4. Open the wire strain relief and remove the RQE wires or cable.
5. Remove the hubs from the case. Maintain the orientation of the hubs.
6. Tilt the RQE switch forward and remove it from the case.

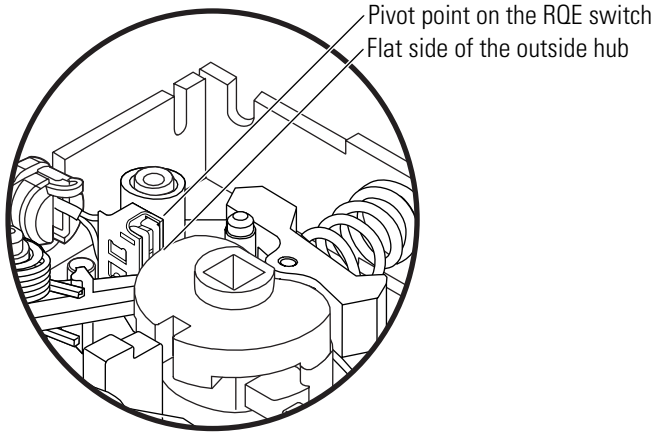


Figure 3.38 RQE switch and hub orientation (closeup)

Reinstalling the RQE switch

1. Make sure that the new RQE switch components are oriented correctly. When installed, the pivot point on the RQE switch should be opposite the flat side of the outside hub, as shown in Figure 3.38.

   Note: If you need to change the orientation of the RQE switch, see step 3 through step 5, *Task C. To turn over the RQE switch:* on page 3–28.

2. Tilt the RQE switch forward and slide it into place in the case.
3. Clamp the RQE wires or cable in the strain relief. Slide the strain relief into position on the case. It should lock into place.
4. Reinstall the hubs. The flat side of the outside hub should be opposite the pivot point on the RQE switch.
5. Reinstall the mortise case cover and case spacer. See *Task H. To reinstall the mortise case cover and case spacer:* on page 3–33.
6. Reinstall the mortise case. See *Task B. To reinstall the mortise case:* on page 3–14.

Replacing the door status switch

Removing the door status switch

1. Remove the mortise case. See *Removing components* on page 3-3.
2. Remove the mortise case cover and spacer. See *Task A. To remove the mortise case cover and case spacer:* on page 3-28.
3. Remove the wire strain relief from the case.
4. Open the wire strain relief and remove the door status switch wires or cable.
5. Remove the door status switch from the clamp.

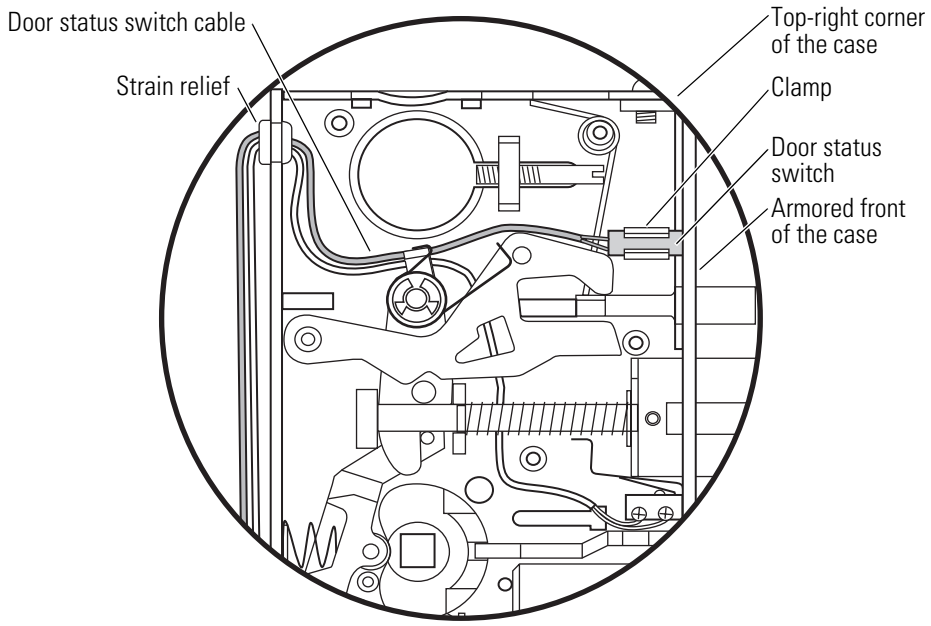


Figure 3.39 Replacing the door status switch for mortise locks

Reinstalling the door status switch

1. Install the new door status switch in the clamp so that the door status switch rests just behind the armored front of the case.
2. Route the door status switch wires or cable as shown in Figure 3.39.
3. Clamp the door status switch wires or cable in the strain relief. Slide the strain relief into position on the case. It should lock into place.
4. Reinstall the mortise case cover and case spacer. See *Task H. To reinstall the mortise case cover and case spacer:* on page 3-33.
5. Replace the mortise case. See *Reinstalling components* on page 3-13.

Replacing the latch status switch

Removing the latch status switch

1. Remove the mortise case. See *Removing components* on page 3–3.
2. Remove the mortise case cover and spacer. See *Task A. To remove the mortise case cover and case spacer:* on page 3–28.
3. Remove the wire strain relief from the case.
4. Open the wire strain relief and remove the latch status switch wire or cable.
5. Slide the brass grommet on the latchbolt away from the U-shaped latchbolt rod support. Grasp the latchbolt by the square-shaped tail and pull the latchbolt up and out of the case. Maintain the orientation of the latchbolt.
6. Pull the tumbler spring away from the "E" tumbler and lift the "E" tumbler out of the case.

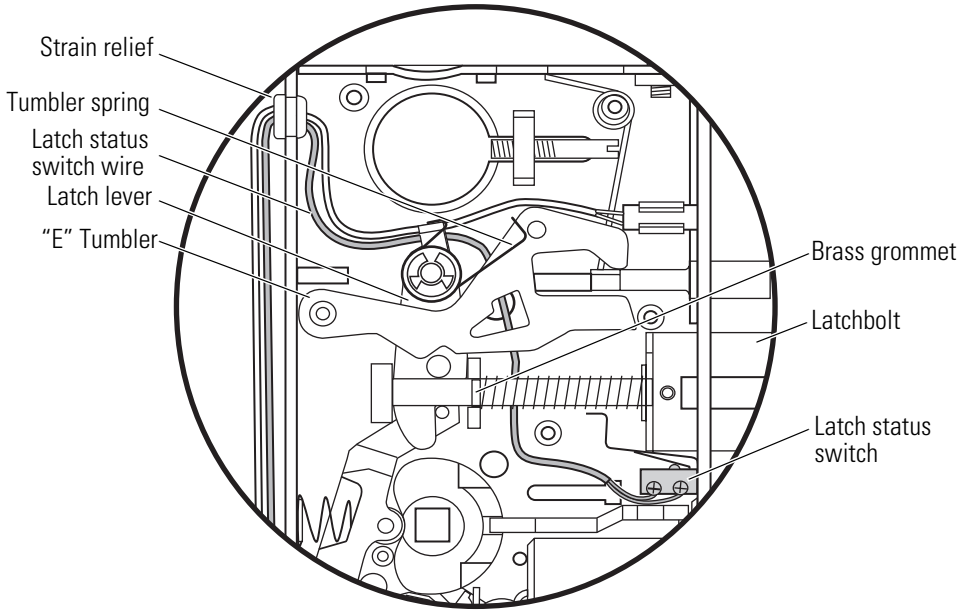


Figure 3.40 Replacing the latch status switch

7. Remove the latch status switch screws.
8. Remove the latch status switch assembly from the case. Move the latch lever as necessary to remove the cable.

Reinstalling the latch status switch

1. Install the new latch status switch assembly in the case.
2. Route the latch status switch wires or cable as shown in Figure 3.40.
3. Clamp the latch status switch wires or cable in the strain relief. Slide the strain relief into position on the case. It should lock into place.
4. Make sure that the latchbolt's anti-friction latch lever is in position and place the latchbolt in the case.

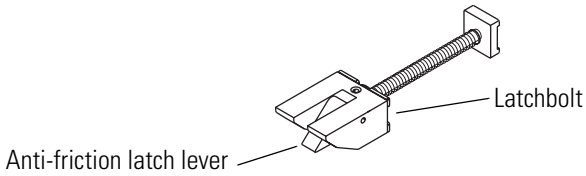


Figure 3.41 Latchbolt with anti-friction latch lever in position

5. Slide the brass grommet on the latchbolt away from the U-shaped latchbolt rod support. Rest the latchbolt rod into the U-shaped support. Release the grommet. It should snap into place.

   Note: If you can pull the square-shaped tail out of the rod support, the latchbolt is not placed properly. Reposition the latchbolt.

6. Install the "E" tumbler in the case. Make sure that the tumbler spring rests against the "E" tumbler.

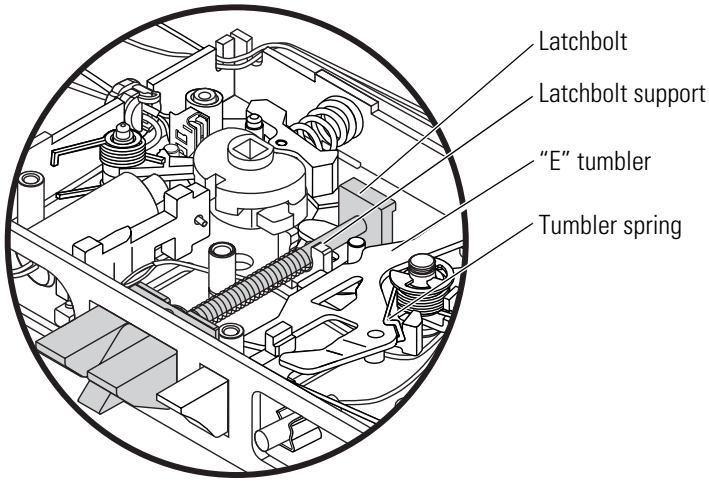


Figure 3.42 Positioning the tumbler spring (closeup, LHRB orientation shown)

7. Reinstall the mortise case cover and case spacer. See *Task H. To reinstall the mortise case cover and case spacer:* on page 3-33.
8. Reinstall the mortise case. See *Task B. To reinstall the mortise case:* on page 3-14.

4

SERVICE AND MAINTENANCE FOR CYLINDRICAL LOCKS

This chapter contains instructions for replacing IDH Max cylindrical components, and servicing and maintaining IDH Max cylindrical components.

Note: When removing and replacing components, always test that the lock works properly when you're finished.

Caution

Before you perform any maintenance on your lock, make sure that you remove power from the lock.

Caution

Before you handle the circuit board or any component on the circuit board, make sure that you are properly grounded using an electrostatic discharge (ESD) protection kit. Touching the circuit board without proper grounding can damage sensitive electronic components—even if you don't notice any static discharge.

REPLACING CYLINDRICAL LOCKS

To replace all of the components for IDH Max Cylindrical Locks, perform all of the tasks in the sections *Removing components* and *Reinstalling components*.

Also use these sections to replace individual components. Use the following table to determine which tasks to perform. For the tasks in the column *See these tasks to remove*, see the section *Removing components* on page 4–3. For the tasks in the column *See these tasks to reinstall*, see the section *Reinstalling components* on *page 4–8*.

To replace this component	See these tasks to remove	See these tasks to reinstall
Core	Task A (page 4–3)	Task I (page 4–17)
Keyed lever/knob	Task A and Task B1 (page 4–3)	Task I and Task J (page 4–16 and page 4–17)
Plain lever/knob	Task B2 (page 4–4)	Task H (page 4–16)
Access door	Task C (page 4–4)	Task J (page 4–18)
Outside escutcheon	Task A through Task D (page 4–3 through page 4–4)	Task F through Task J (page 4–12 through page 4–18)
RQE rose liner	Task A through Task F (page 4–3 through page 4–6)	Task D through Task J (page 4–11 through page 4–18)
Lock chassis	Task A through Task G (page 4–3 through page 4–6)	Task B through Task J (page 4–10 through page 4–18)
Inside escutcheon	Task A through Task H (page 4–3 through page 4–7)	Task A through Task J (page 4–8 through page 4–18)

Removing components

Task A. To remove the core and throw member:

1. Insert the control key into the core and rotate the key 15 degrees to the right.
2. Remove the core and throw member from the lever/knob.

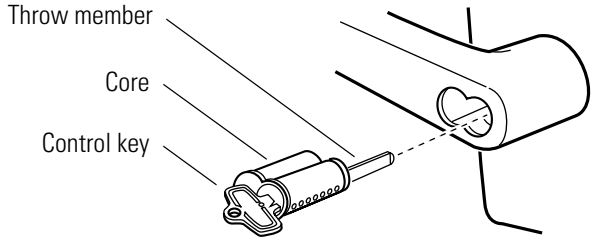


Figure 4.1 Removing the core and throw member (lever shown)

Task B1. To remove the keyed lever/knob:

1. Insert a flat blade screwdriver into the figure-8 core hole and into the lever/knob keeper.
2. Press the screwdriver blade in the direction of the arrow shown in Figure 4.2.

   Note: You will not be able to remove the lever if the screwdriver blade is inserted too far past the keeper.

3. Slide the lever off the sleeve.

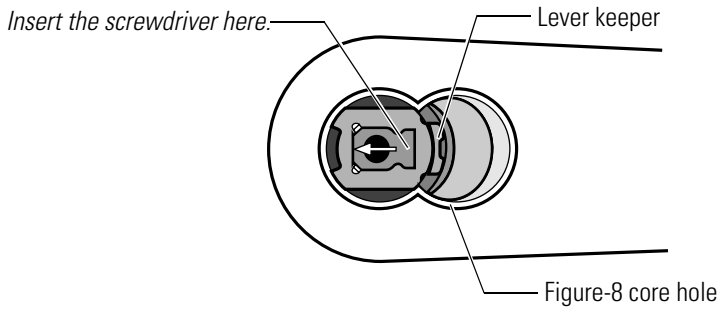


Figure 4.2 Removing the keyed lever/knob (lever shown)

Task B2. To remove the plain lever/knob:

Insert the protrusion on the spanner wrench into the hole on the shaft of the lever, as shown in Figure 4.3. Slide the lever off the sleeve.

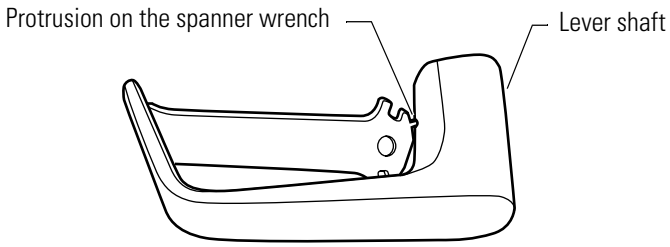


Figure 4.3 Removing the plain lever

Task C. To remove the access door:

1. Use the appropriate bit driver to remove the security screw from the access door.
2. Open the access door and remove it from the inside escutcheon.

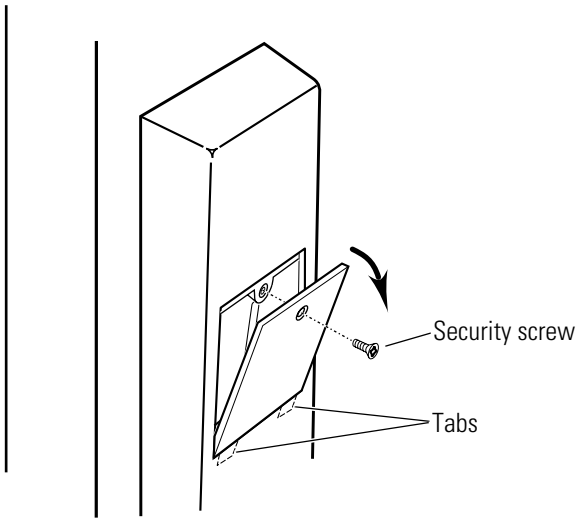


Figure 4.4 Removing the access door

Task D. To disconnect the connections and remove the outside escutcheon:

1. Remove the upper escutcheon and lower escutcheon screws from the inside escutcheon. Pull the inside escutcheon away from the door enough to expose the control electronics circuit board.

   Note: You can let the inside escutcheon dangle from the field wire harness while completing Task D through Task H.

2. Disconnect the three sensor connections and solenoid connection.

3. Disconnect the reader wire harness from the control electronics circuit board.

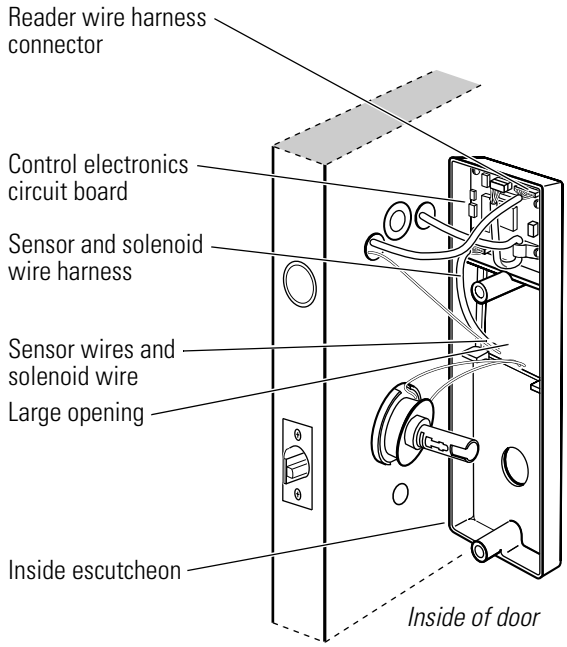


Figure 4.5 Loosening the escutcheon and disconnecting the connections

4. Remove the outside escutcheon from the door.

Caution

When removing the outside escutcheon, make sure that the reader wire harness is not rubbed across any sharp edges or over any surface that could damage its sleeving or wire insulation.

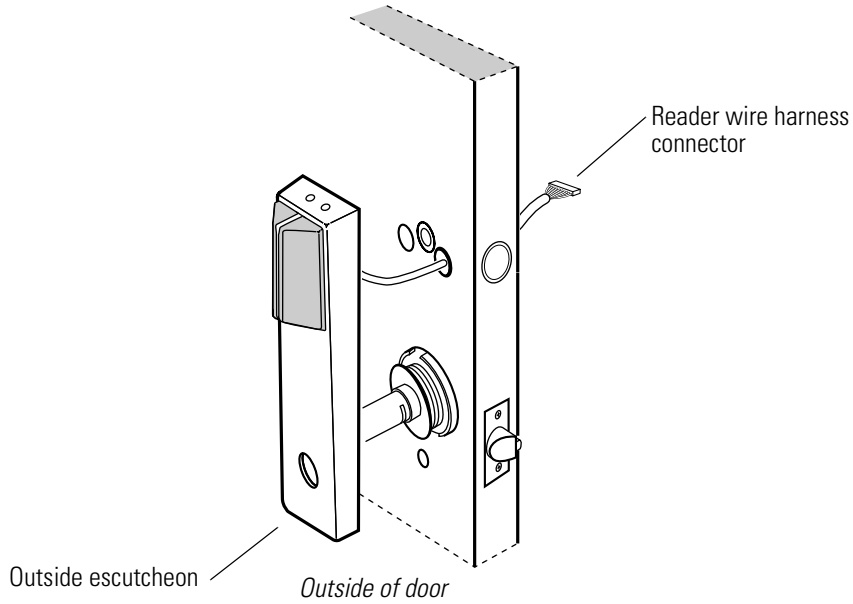


Figure 4.6 Removing the outside escutcheon from the door

Task E. To remove the bushings, trim hole inserts, and hub washers:

Remove the bushings, trim hole inserts, and hub washers from each side of the door.

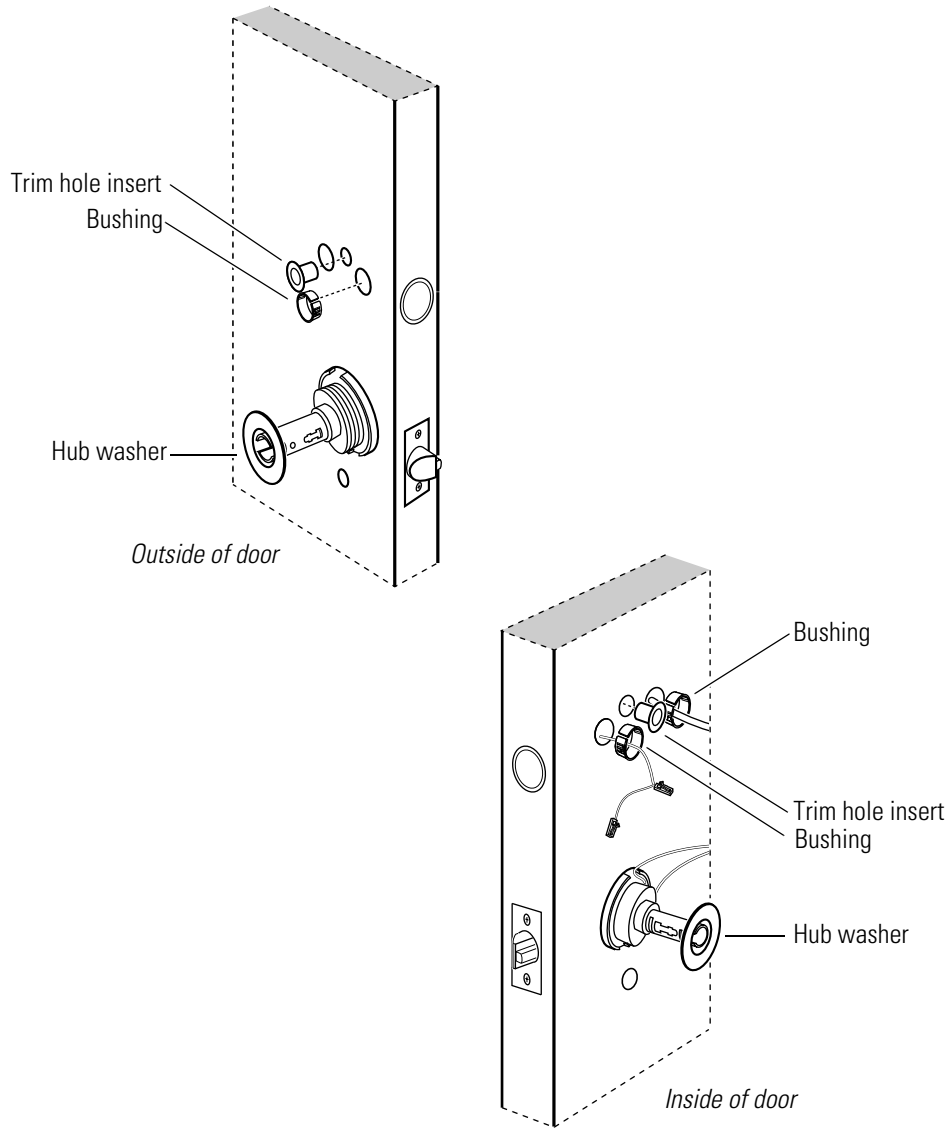


Figure 4.7 Removing the bushings, trim hole inserts, and hub washers

Task F. To remove the RQE rose liner:

1. Remove the through-bolts from the top and bottom holes in the RQE rose liner.
2. Slide the rose liner off the door.

Task G. To remove the lock chassis:

Slide the lock chassis out of the door.

Task H. To remove the inside escutcheon:

1. Remove the wire transfer hinge.
2. Pull the wires and splice connectors out of the holes or pockets in the door and frame.
3. Disconnect the leads.

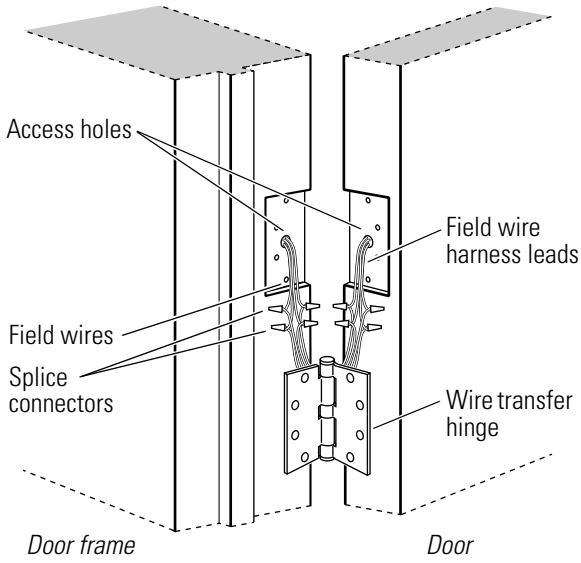


Figure 4.8 Removing the field wire harness

4. Remove the inside escutcheon from the door and pull the field wire harness out of the door.

Caution

When removing the inside escutcheon, make sure that the field wire harness is not rubbed across any sharp edges or over any surface that could damage its sleeving or wire insulation.

Reinstalling components

Task A. To pull the field wire harness through the door:

1. Feed the field wire harness (connected to the inside escutcheon) into the field harness & RH/RHRB reader wire hole and down into the hole drilled through the door to the hinge mortise.
2. From the latch edge of the door, fish the field wire harness through the door to the hinge mortise.
3. Make sure there are 3″ to 4″ of slack in the field wire harness to allow access to the control electronics circuit board in the inside escutcheon.

   Note: You can let the inside escutcheon dangle from the field wire harness while completing Task B through Task E.

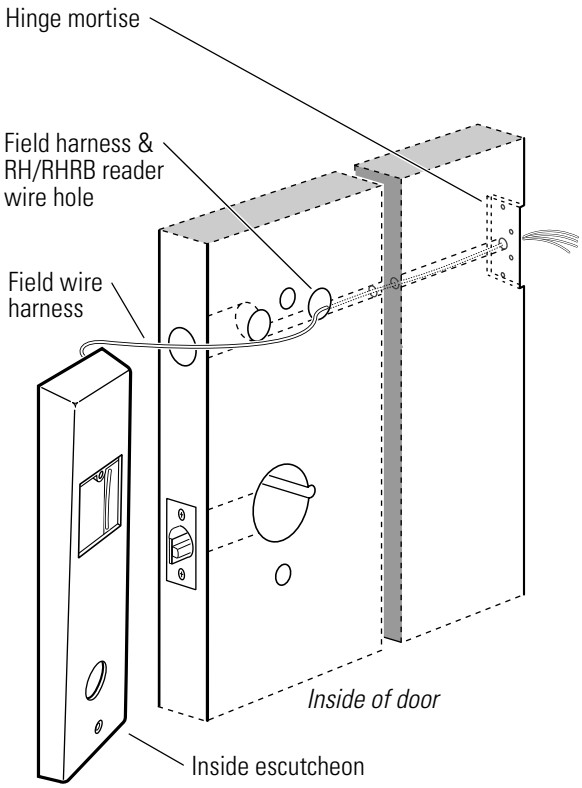


Figure 4.9 Pulling the field wire harness through the door

4. Trim the four leads of the field wire harness. Leave sufficient length to connect to the wire transfer hinge.
5. Splice the power and communication field wiring to the four pairs of leads on the frame side of the hinge, following the hinge manufacturer's instructions.

6. Splice the four field wire harness leads (listed in the table below) to the four pairs of leads on the door side of the hinge, matching each pair of leads to its corresponding field wire.

Wire	Color
Ground	Black
12 VDC	Red
Com+	Orange
Com–	Green

7. Insert the wires and splice connectors into the holes or pockets in the door and frame, being careful not to pinch the wires. Install the wire transfer hinge.

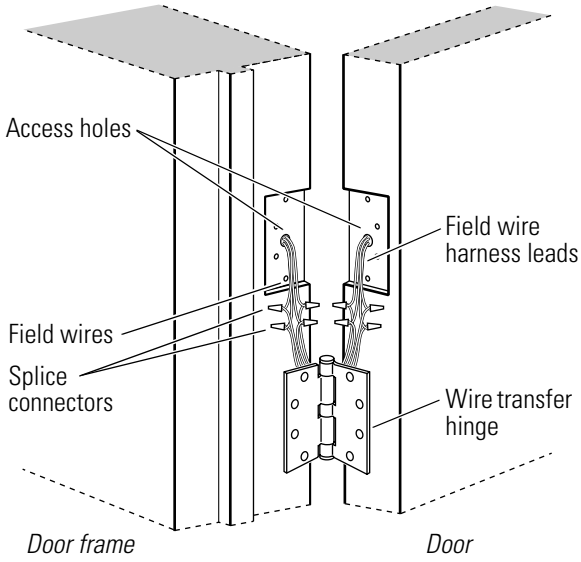


Figure 4.10 Installing the wire transfer hinge

Task B. To adjust for the door's thickness:

1. Determine the door's thickness.
2. Pull the rose locking pin and rotate the outside rose liner until the proper groove on the through-bolt stud lines up with the hub face.

   Note 1: Make sure that the locking pin fully locks into the rose liner.

   Note 2: The lock fits doors 1 3/4″ to 2 1/4″ thick. (A spacer is available for 1 3/8″ doors.)

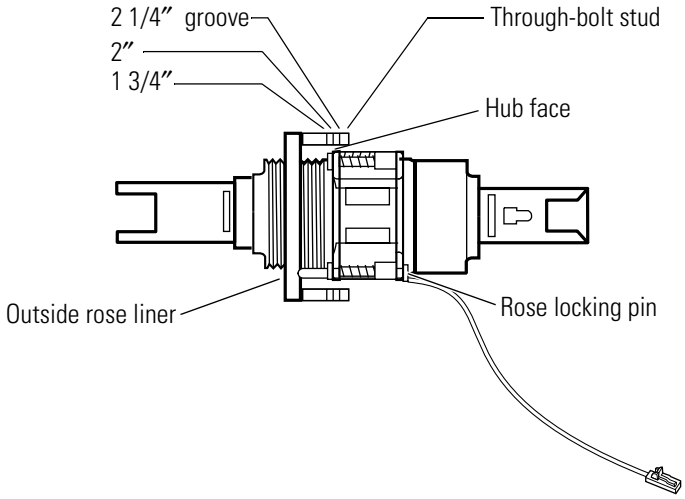


Figure 4.11 Adjusting the outside liner for the door thickness

Task C. To reinstall the lock chassis and engage the retractor in the latch:

1. From the outside of the door, insert the lock chassis into the 2 1/8″ chassis hole, routing the solenoid wire through the notch.

Caution

Make sure that the latch tube prongs engage the chassis frame and that the latch tailpiece engages the retractor.

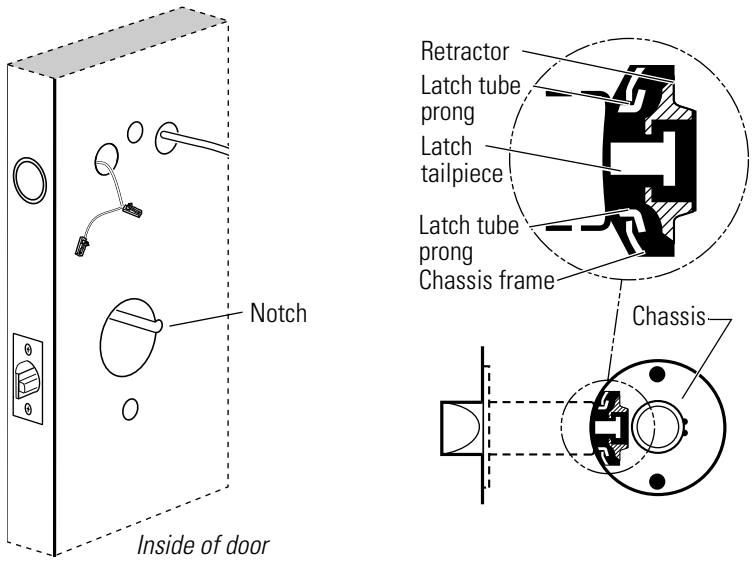


Figure 4.12 Reinstalling the lock chassis and engaging the retractor in the latch

Task D. To reinstall the RQE rose liner:

1. Place the RQE rose liner on the chassis, aligning the holes in the rose liner with the holes prepared in the door.

Caution

Make sure that there is clearance for the solenoid wire between the RQE rose liner and the door.

2. Install the through-bolts through the RQE rose liner and door in the top and bottom holes.

3. Tighten the RQE rose liner on the door with the through-bolts.

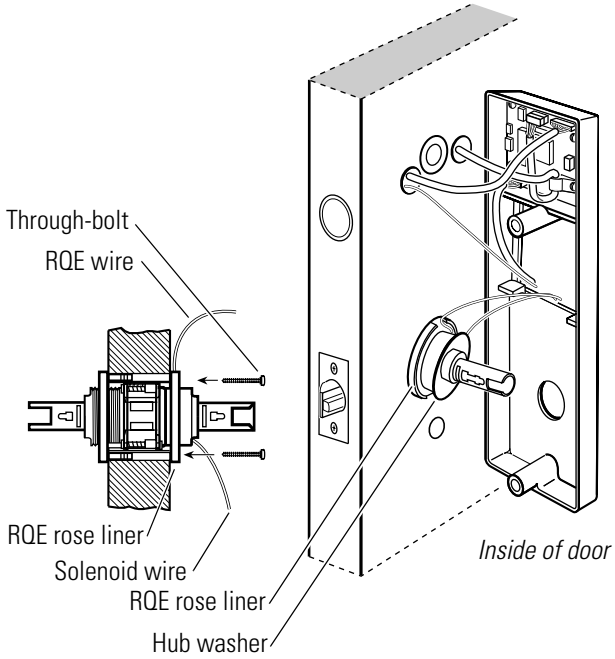


Figure 4.13 Reinstalling the through-bolts and RQE rose liner

Task E. To reinstall trim hole inserts, bushings, and hub washers:

1. Insert the two trim hole inserts into the upper trim hole on each side of the door.
2. *For LH and LHRB doors*

   Insert two bushings into the door status switch & LH/LHRB reader wire hole on each side of the door.

   For RH and RHRB doors

   Insert two bushings into the field harness & RH/RHRB reader wire hole on each side of the door.
3. Insert a bushing into the remaining wire hole on the inside of the door.

4. On each side of the door, slide a hub washer over the chassis sleeve so it rests on the hub.

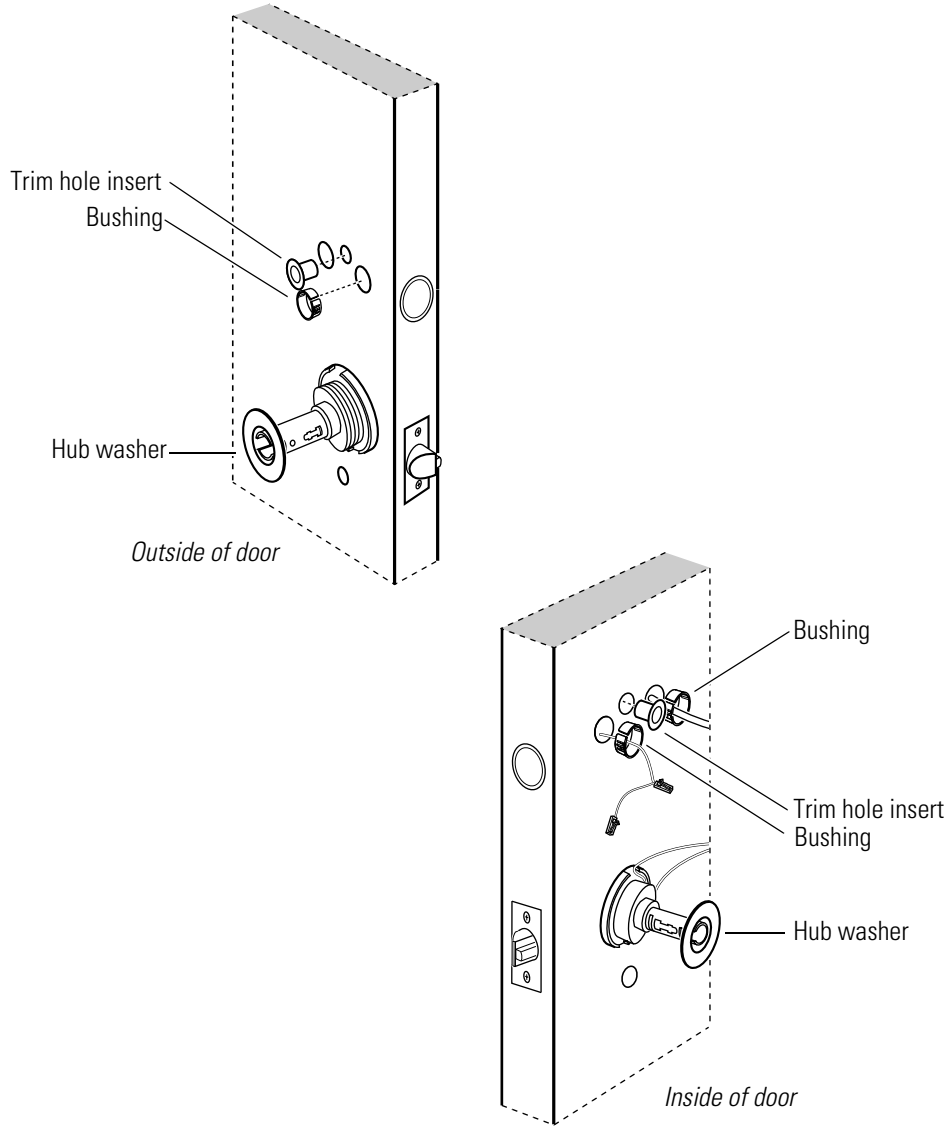


Figure 4.14 Reinstalling trim hole inserts, bushings, and hub washers

Task F. To connect the reader wire harness:

1. *For LH and LHRB doors*
   From the outside of the door, feed the reader wire harness connector through the door status switch & LH/LHRB reader wire hole.

   For RH and RHRB doors
   From the outside of the door, feed the reader wire harness connector through the field harness & RH/RHRB reader wire hole.

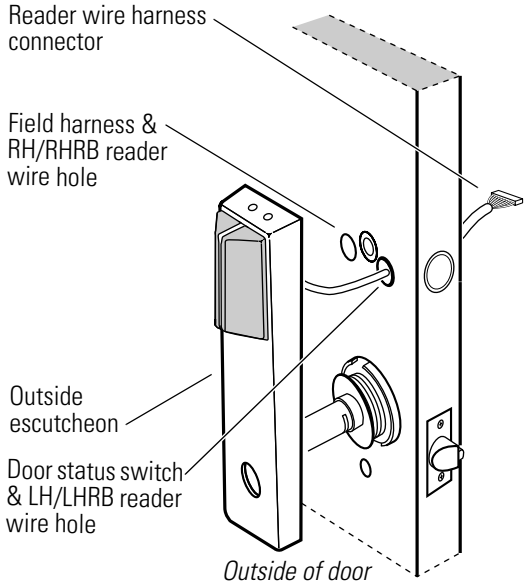


Figure 4.15 Feeding the reader wire harness connector through the wire hole

2. Temporarily rest the outside escutcheon on the door by inserting the escutcheon studs into the trim holes.
3. Connect the reader wire harness to the control electronics circuit board in the inside escutcheon.

Caution

When connecting the reader wire harness, make sure that:

- *there are no loose wire connections where the wires are inserted into the connectors*
- *the connectors are firmly mated.*

4. From the inside of the door, feed the sensor and solenoid wire harness from the control electronics circuit board, as well as the sensor wires and the solenoid wire, through the large opening in the inside escutcheon.

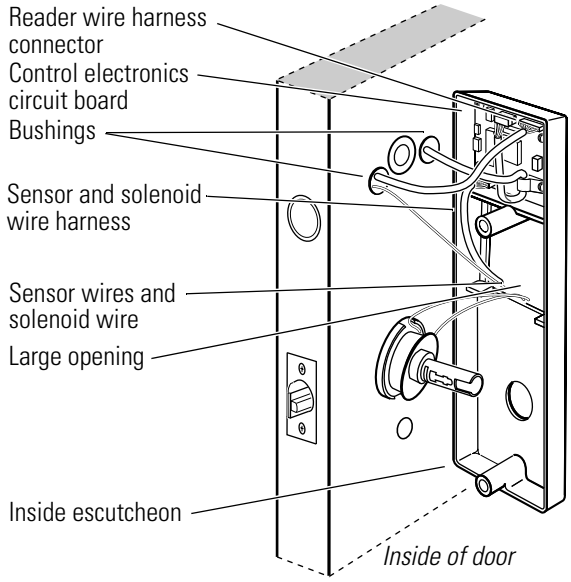


Figure 4.16 Connecting the reader wire harness to the control electronics circuit board

Caution

When routing the reader wire harness, make sure the reader wire harness is not rubbed across any sharp edges or over any surface that could damage its sleeving or wire insulation.

Task G. To secure the escutcheons and complete the connections:

1. Position the inside and outside escutcheons onto the door.
2. *Making sure that the escutcheon does not pinch the wires*, secure the escutcheons to the door—but do not tighten. Use the upper escutcheon screw at the top escutcheon hole and the lower escutcheon screw at the bottom escutcheon hole.

Caution

When routing the sensor and solenoid wire harness, the sensor wires, and the solenoid wires, make sure the wires are not rubbed across any sharp edges or over any surface that could damage their sleeving or wire insulation.

3. Make the solenoid connection and three sensor connections, and place the wires into the inside escutcheon.

Wire connection	Color	No. of wires	No. of pins
Solenoid	Yellow	2	3
RQE	Brn/Org	2	3
Shorting connection	Purple	2	2
Door status sensor	White	2	2

Caution

When making the sensor connections and solenoid connection, make sure:

- *there are no loose wire connections where the wires are inserted into the connectors*
- *the connectors are firmly mated.*

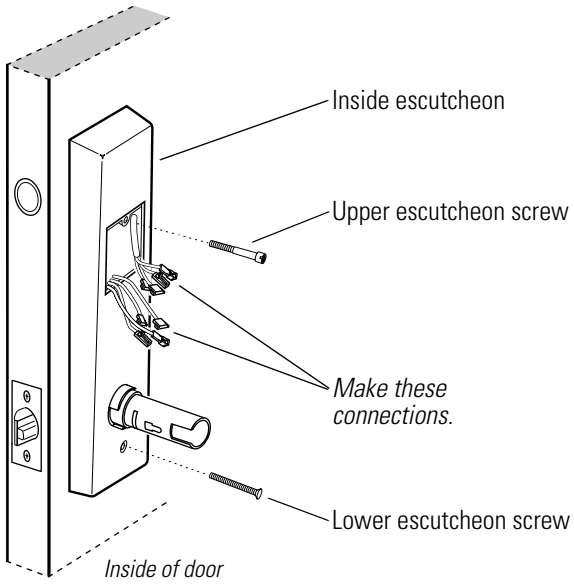


Figure 4.17 Securing the through-bolt escutcheon and completing connections

Task H. To reinstall the inside and outside levers/knobs:

Note: To use a core and throw member from a manufacturer other than BEST with a 9KW Lock, see the *Installation Instructions for 9K Non-interchangeable Cores & Throw Members (T56093).* Skip Step 4 and Step 5 of those instructions.

1. *For the inside and outside knobs*
   Push firmly on the knob until it is seated.

   For the inside and outside levers
   With the handle pointing toward the door hinges, push firmly on the lever until it is seated.

2. Tighten the upper and lower escutcheon screws.

3. Turn the levers/knobs to check that they operate smoothly.

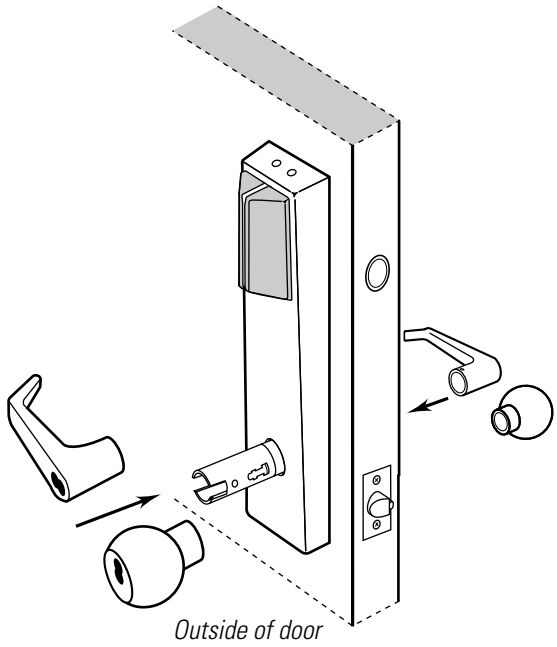


Figure 4.18 Reinstalling the levers/knobs

Task I. To reinstall the core and throw member:

1. Install the blocking plate onto the throw member.

You must use the blocking plate to prevent unauthorized access.

Caution

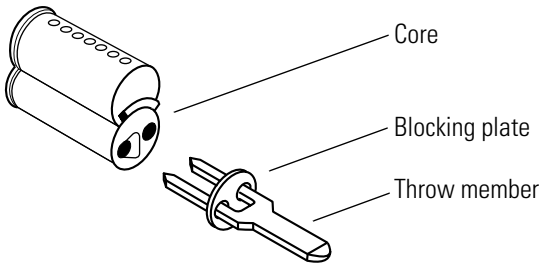


Figure 4.19 Reinstalling the blocking plate and throw member

2. Insert the control key into the core and rotate the key 15 degrees to the right.
3. Insert the throw member into the core.

4. Insert the core and throw member into the lever/knob with the control key.

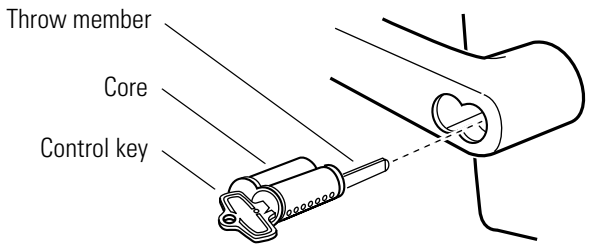


Figure 4.20 Reinstalling the core and throw member (lever shown)

5. Rotate the control key 15 degrees to the left and withdraw the key.

   Note: *For 6-pin core users only*, install the plastic spacer (supplied with permanent cores) instead of the blocking plate onto the throw member.

Caution

The control key can be used to remove cores and to access doors. Provide adequate security for the control key.

Task J. To reinstall the access door:

1. *Making sure that the access door does not pinch any wires*, insert the tabs of the access door into its mating slots and swing the door closed.
2. Use the appropriate bit driver to secure the access door with the security screw. Tighten firmly.

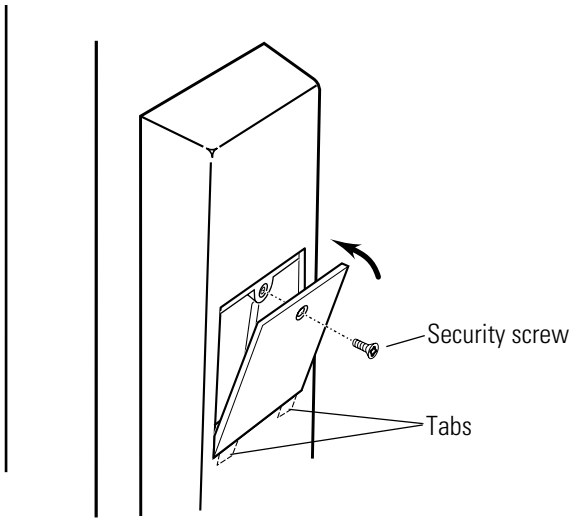


Figure 4.21 Reinstalling the access door

REVERSING THE SOLENOID WHEN CHANGING THE FUNCTION

Because of the complex nature of this procedure, BEST recommends that you order a new cylindrical chassis. Contact your BEST Representative.

Use the following part numbers when ordering a new cylindrical chassis.

Chassis type	Part number
8KW DDEL	C60783
8KW DDEU	C60781
9KW DDEL	C60787
9KW DDEL, non-IC	C60791
9KW DDEU	C60785
9KW DDEU, non-IC	C60789

REPLACING COMPONENTS FOR CYLINDRICAL LOCKS

Replacing the solenoid

Because of the complex nature of this procedure, BEST recommends that you order a new cylindrical chassis. Contact your BEST Representative.

Use the part numbers listed in *Reversing the solenoid when changing the function* when ordering a new cylindrical chassis.

Replacing the RQE rose liner for cylindrical locks

Removing the RQE rose liner

1. Remove the following parts:
   - Remove the access door. See *Task C. To remove the access door:* on page 4–4.
   - Remove the inside lever/knob. See *Task B1. To remove the keyed lever/knob:* on page 4–3.
   - Remove the upper and lower escutcheon screws from the inside escutcheon.
   - Remove the inside hub washers.

   Note: You can let the inside escutcheon dangle from the field wire harness while completing this task.
2. Disconnect the RQE connector.
3. Remove the through-bolts and the RQE rose liner.

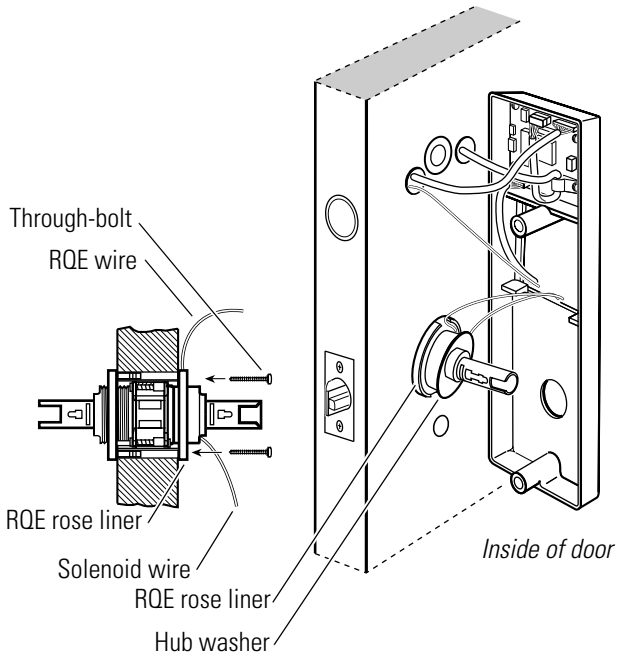


Figure 4.22 Removing and reinstalling the RQE rose liner

Reinstalling the RQE rose liner

1. Place the RQE rose liner on the chassis, aligning the holes in the rose liner with the holes prepared in the door.

Make sure that there is clearance for the solenoid wire between the RQE rose liner and the door.

2. Install the through-bolts through the RQE rose liner and door in the top and bottom holes.
3. Tighten the RQE rose liner on the door with the through-bolts.
4. Connect the RQE connector.
5. Reinstall the following parts:
   - Reinstall the inside hub washer.
   - Reinstall the upper and lower escutcheon screws on the inside escutcheon.
   - Reinstall the inside lever/knob. See *Task H. To reinstall the inside and outside levers/knobs:* on page 4–16.
   - Reinstall the access door. See *Task J. To reinstall the access door:* on page 4–18.

Replacing the door status switch and magnet assembly

Removing the door status and switch magnet assembly

1. Remove the inside lever/knob. See *Task B1. To remove the keyed lever/knob:* on page 4–3.
2. Remove the access door. See *Task C. To remove the access door:* on page 4–4.
3. Remove the upper and lower escutcheon screws from the inside escutcheon.

   Note: You can let the inside escutcheon dangle from the field wire harness while completing this task.

4. Disconnect the door status switch connector from the sensor and solenoid wire harness.

5. Remove the magnet from the hole in the door frame.

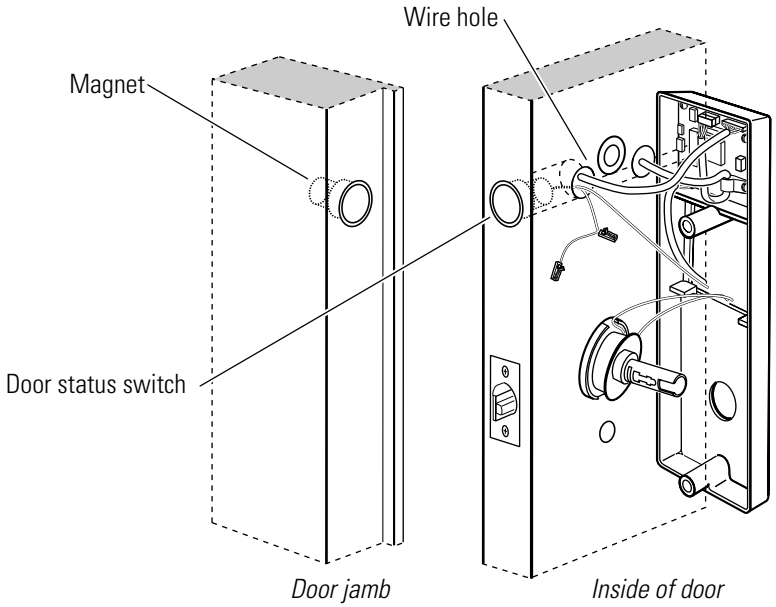


Figure 4.23 Removing and reinstalling the door status switch and magnet assembly

Reinstalling the door status and switch magnet assembly

1. Insert the new magnet in the hole in the door frame.
2. Insert the door status switch assembly into the door status switch hole in the edge of the door, feeding the connectors out the wire hole to the inside of the door.
3. Connect the door status sensor connector and shorting connector to the sensor and solenoid wire harness.

Wire connection	Color	No. of wires	No. of pins
Shorting connection	Purple	2	2
Door status sensor	White	2	2

4. Reinstall the upper and lower escutcheon screws on the inside escutcheon.
5. Reinstall the inside lever/knob. See *Task H. To reinstall the inside and outside levers/knobs:* on page 4–16.
6. Reinstall the access door. See *Task J. To reinstall the access door:* on page 4–18.

5 ADDITIONAL SERVICE AND MAINTENANCE

This chapter contains instructions for replacing IDH Max components such as wire harnesses, card readers, and circuit boards.

Note: When replacing components, always test that the lock works properly when you're finished.

Caution

Before you perform any maintenance on your lock, make sure that you remove power from the lock.

Caution

Before you handle the circuit board or any component on the circuit board, make sure that you are properly grounded using an electrostatic discharge (ESD) protection kit. Touching the circuit board without proper grounding can damage sensitive electronic components—even if you don't notice any static discharge.

REPLACING WIRE HARNESSES

Replacing the sensor and solenoid wire harness

Removing the sensor and solenoid wire harness

1. Remove the core and throw member. For mortise instructions, see *Task A. To remove the core:* on page 3–3. For cylindrical instructions, see *Task A. To remove the core and throw member:* on page 4–3.
2. Use the appropriate bit driver to remove the security screw from the access door. Open the access door and remove it from the inside escutcheon.
3. Remove the inside lever/knob. For mortise instructions, see *Task B. To remove the inside and outside levers/knobs:* on page 3–4. For cylindrical instructions, see *Task B2. To remove the plain lever/knob:* on page 4–4.
4. Remove the upper and lower escutcheon screws from the inside escutcheon. Pull the inside escutcheon away from the door enough to expose the control electronics circuit board.

   Note: You can let the inside escutcheon dangle from the field wire harness while completing this task.
5. Disconnect the three sensor connections and the solenoid connection.
6. Disconnect the sensor and solenoid wire harness from the control electronics circuit board.

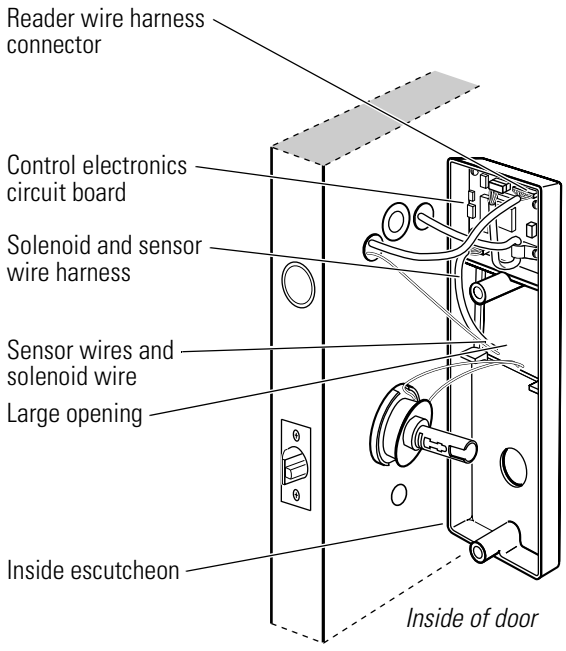


Figure 5.1 Disconnecting and connecting the reader wire harness (cylindrical lock shown)

Reinstalling the sensor and solenoid wire harness

1. Connect the sensor and solenoid wire harness to the control electronics circuit board.
2. Make the connections and reinstall the inside escutcheon. For mortise instructions, see *Task F. To secure the escutcheons and complete the connections:* on page 3–20. For cylindrical instructions, see *Task G. To secure the escutcheons and complete the connections:* on page 4–15.
3. Reinstall the inside lever/knob. For mortise instructions, see *Task G. To reinstall the inside and outside levers/knobs:* on page 3–21. For cylindrical instructions, see *Task H. To reinstall the inside and outside levers/knobs:* on page 4–16.
4. Reinstall the core and throw member. For mortise instructions, see *Task H. To reinstall the core (EEL and EEU only):* on page 3–23. For cylindrical instructions, see *Task I. To reinstall the core and throw member:* on page 4–17.
5. *Making sure that the access door does not pinch any wires*, insert the tabs of the access door into its mating slots and swing the door closed. Use the appropriate bit driver to secure the access door with the security screw. Tighten firmly.

Replacing the reader wire harness

Removing the reader wire harness

To replace a reader wire harness for the magnetic stripe swipe or proximity card reader, a new outside escutcheon gasket (A60725) is needed.

1. Remove the core and throw member. For mortise instructions, see *Task A. To remove the core:* on page 3–3. For cylindrical instructions, see *Task A. To remove the core and throw member:* on page 4–3.
2. Remove the inside lever/knob. For mortise instructions, see *Task B. To remove the inside and outside levers/knobs:* on page 3–4. For cylindrical instructions, see *Task B2. To remove the plain lever/knob:* on page 4–4.
3. Use the appropriate bit driver to remove the security screw from the access door. Open the access door and remove it from the inside escutcheon.
4. Remove the outside escutcheon from the door. For mortise instructions, see *Task D. To disconnect the connections and remove the outside escutcheon:* on page 3–6. For cylindrical instructions, see *Task D. To disconnect the connections and remove the outside escutcheon:* on page 4–4.
5. *For magnetic stripe swipe or proximity card readers,* remove the escutcheon gasket from the outside escutcheon and discard the gasket.

6. Loosen the screw holding the harness clamp and remove the clip. Save the clip.

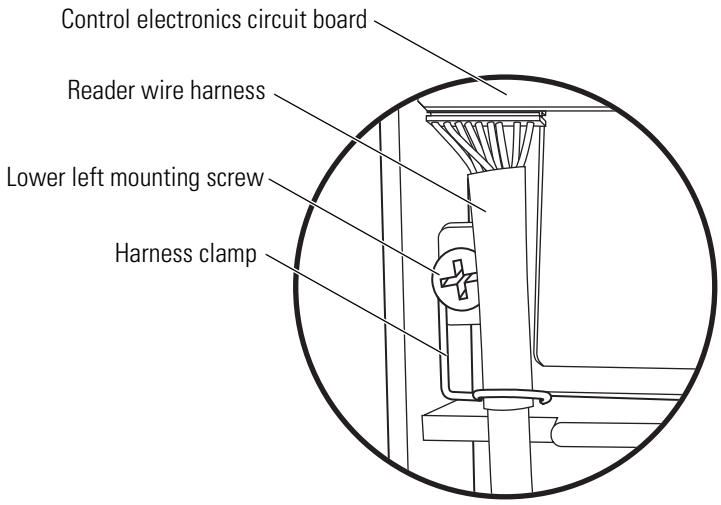


Figure 5.2 Removing the harness clamp

7. Disconnect the reader wire harness from the reader circuit board.

Reinstalling the reader wire harness

1. Connect the reader wire harness to the reader circuit board.
2. Slide the harness clamp under the loosened screw. Tighten the screw. See Figure 5.2.
3. *For magnetic stripe swipe and proximity card readers*, peel away the protective backing from the edge of the escutcheon gasket and slide the gasket onto the upper escutcheon post. Press the gasket into place on the edge of the escutcheon so the reader circuit board is covered.
4. Connect the reader wire harness to the control electronics circuit board. For mortise instructions, see *Task E. To connect the reader wire harness:* on page 3–17. For cylindrical instructions, see *Tighten the RQE rose liner on the door with the through-bolts.* on page 4–12.
5. Reinstall the outside escutcheon. For mortise instructions, see *Task F. To secure the escutcheons and complete the connections:* on page 3–20. For cylindrical instructions, see *Task G. To secure the escutcheons and complete the connections:* on page 4–15.
6. Reinstall the inside lever/knob. For mortise instructions, see *Task G. To reinstall the inside and outside levers/knobs:* on page 3–21. For cylindrical instructions, see *Task H. To reinstall the inside and outside levers/knobs:* on page 4–16.

7. Reinstall the core and throw member. For mortise instructions, see *Task H. To reinstall the core (EEL and EEU only):* on page 3–23. For cylindrical instructions, see *Task I. To reinstall the core and throw member:* on page 4–17.
8. *Making sure that the access door does not pinch any wires*, insert the tabs of the access door into its mating slots and swing the door closed. Use the appropriate bit driver to secure the access door with the security screw. Tighten firmly.

Replacing the field wire harness

Removing the field wire harness

1. Remove the core and throw member. For mortise instructions, see *Task A. To remove the core:* on page 3–3. For cylindrical instructions, see *Task A. To remove the core and throw member:* on page 4–3.
2. Remove the inside and outside knobs/levers. For mortise instructions, see *Task B. To remove the inside and outside levers/knobs:* on page 3–4. For cylindrical instructions, see *Task B1. To remove the keyed lever/knob:* on page 4–3.
3. Use the appropriate bit driver to remove the security screw from the access door. Open the access door and remove it from the inside escutcheon.
4. Loosen the inside escutcheon and disconnect the connections. For mortise instructions, see *Task D. To disconnect the connections and remove the outside escutcheon:* on page 3–6. For cylindrical instructions, see *Task D. To disconnect the connections and remove the outside escutcheon:* on page 4–4.
5. *For mortise locks*, perform the following steps:
   - Remove the cylinder and mortise case faceplate. See *Task E. To remove the mortise case faceplate and cylinder:* on page 3–10.
   - Remove the mounting plates. See *Task F. To remove the mounting plates:* on page 3–11.
   - Remove the mortise case. See *Task G. To remove the mortise case:* on page 3–11.
6. Remove the inside escutcheon from the door. For mortise instructions, see *Task H. To remove the inside escutcheon:* on page 3–12. For cylindrical instructions, see *Task H. To remove the inside escutcheon:* on page 4–7.
7. Place the inside escutcheon on a flat surface.
8. Use a #1 Phillips head screwdriver to unscrew the lower-right circuit board screw and remove the field wire harness strain relief. Be careful not to touch the circuit board with the screwdriver and not to strip the screw.

Caution

Do not use a power screwdriver to remove or reinstall the circuit board screw.

9. Disconnect the field wire harness from the control electronics circuit board.

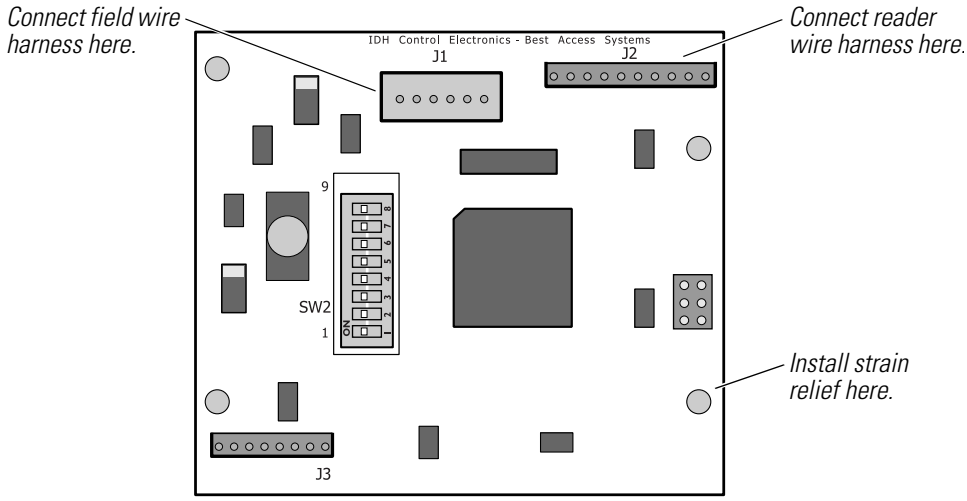


Figure 5.3 Connecting the wire harnesses to the control electronics circuit board

Reinstalling the field wire harness

1. Connect the field wire harness to the control electronics circuit board. See Figure 5.3.
2. Reinstall the field wire harness strain relief and install the circuit board screw. Try to start the circuit board screw without laying the strain relief flush against the control electronics circuit board. Then tighten the screw.

Caution

Remember to reinstall the field wire harness strain relief. The lock may be damaged or not operate properly without the strain relief.

3. Pull the field wire harness through the door and connect the field wire harness to the wire transfer hinge. For mortise instructions, see *Task A. To pull the field wire harness through the door:* on page 3–13. For cylindrical instructions, see *Task A. To pull the field wire harness through the door:* on page 4–8.
4. *For mortise locks*, perform the following steps:
   - Reinstall the mortise case. See *Task B. To reinstall the mortise case:* on page 3–14.
   - Reinstall the mounting plates. See *Task C. To reinstall the mounting plates:* on page 3–15.
   - Reinstall the cylinder and mortise case faceplate. See *Task D. To reinstall the cylinder and mortise case faceplate:* on page 3–16.

5. Connect the reader wire harness to the control electronics circuit board. For mortise instructions, see *Task E. To connect the reader wire harness:* on page 3–17. For cylindrical instructions, see *Tighten the RQE rose liner on the door with the through-bolts.* on page 4–12.
6. Make the connections and reinstall the inside escutcheon. For mortise instructions, see *Task F. To secure the escutcheons and complete the connections:* on page 3–20. For cylindrical instructions, see *Task G. To secure the escutcheons and complete the connections:* on page 4–15.
7. Reinstall the inside lever/knob. For mortise instructions, see *Task G. To reinstall the inside and outside levers/knobs:* on page 3–21. For cylindrical instructions, see *Task H. To reinstall the inside and outside levers/knobs:* on page 4–16.
8. Reinstall the core and throw member. For mortise instructions, see *Task H. To reinstall the core (EEL and EEU only):* on page 3–23. For cylindrical instructions, see *Task I. To reinstall the core and throw member:* on page 4–17.
9. *Making sure that the access door does not pinch any wires*, insert the tabs of the access door into its mating slots and swing the door closed. Use the appropriate bit driver to secure the access door with the security screw. Tighten firmly.

REPLACING THE CONTROL ELECTRONICS CIRCUIT BOARD

1. Remove the field wire harness from the control electronics circuit board. Perform step 1 through step 9 in the section *Removing the field wire harness* on page 5–5.
2. Unscrew the three remaining control electronics screws from the control electronics circuit board. Save the screws.
3. Remove the control electronics circuit board and place it in an anti-static bag.
4. Position the control electronics circuit board in the inside escutcheon and secure it using three of the control electronics screws. Install all but the lower-right control electronics screw.

Note: You do not need to change the positions of the DIP switches on the control electronics circuit board.

- By default, switches 1 through 5 are set to ON. These switches are for possible future applications.
- By default, switches 6 and 7 are set to ON for automatic baud rate detection. This setting lets you determine the baud rate for communication between the lock's control electronics circuit board and the panel interface module by setting DIP switches on the panel interface circuit board.
- Switch 8 is set to ON only for locks with a magnetic stripe insertion card reader; it is set to OFF for locks with a magnetic stripe swipe card reader.

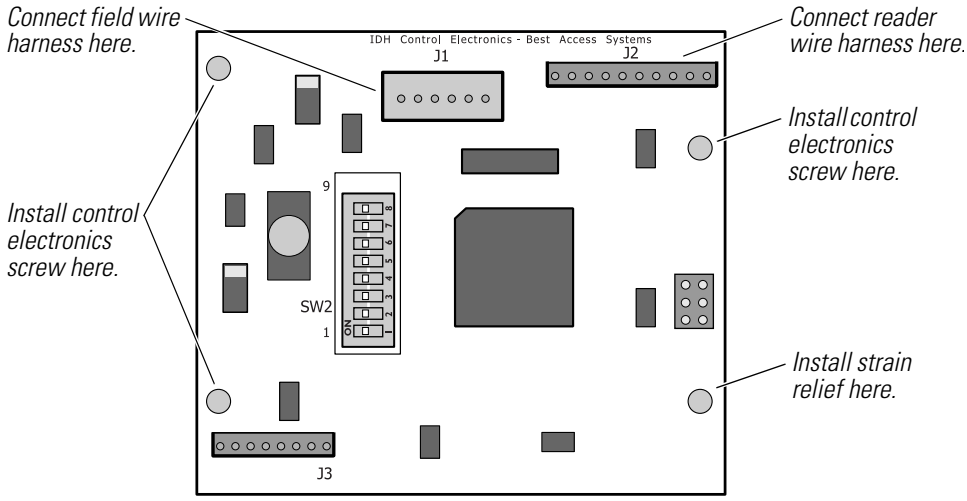


Figure 5.4 Installing the screws for the control electronics circuit board

5. Reinstall the field wire harness. Perform step 1 through step 9 in the section *Reinstalling the field wire harness* on page 5–6.

REPLACING THE READER CIRCUIT BOARD ASSEMBLY

To replace a reader circuit board assembly for the proximity card reader, the following new parts are needed:

- reader circuit board assembly (B80902)
- outside escutcheon gasket (A60725)
- tape for mounting the sounder (A60324).

To replace a reader circuit board assembly for the magnetic stripe swipe card reader, the following new parts are needed:

- reader circuit board assembly (B80901)
- outside escutcheon gasket (A60725)
- tape for mounting the sounder (A60324).

Replacing the reader circuit board assembly

Removing the reader circuit board assembly

1. Remove the core and throw member. For mortise instructions, see *Task A. To remove the core:* on page 3–3. For cylindrical instructions, see *Task A. To remove the core and throw member:* on page 4–3.
2. Remove the inside and outside knobs/levers. For mortise instructions, see *Task B. To remove the inside and outside levers/knobs:* on page 3–4. For cylindrical instructions, see *Task B1. To remove the keyed lever/knob:* on page 4–3.
3. Use the appropriate bit driver to remove the security screw from the access door. Open the access door and remove it from the inside escutcheon.
4. Remove the outside escutcheon. For mortise instructions, see *Task D. To disconnect the connections and remove the outside escutcheon:* on page 3–6. For cylindrical instructions, see *Task D. To disconnect the connections and remove the outside escutcheon:* on page 4–4.
5. Remove the escutcheon gasket from the outside escutcheon and discard the gasket.
6. Unscrew the two reader electronics mounting screws on the reader circuit board assembly and remove the harness clamp. Save the harness clamp and screws.
7. *For locks with a magnetic stripe swipe card reader*, disconnect the reader harness from the reader circuit board assembly.

   For locks with a proximity card reader, carefully pull the reader circuit board assembly straight out from the escutcheon and remove it.
8. Remove the reader circuit board from the outside escutcheon.
9. Insert a flat blade screwdriver under the sounder and turn it to remove the sounder from the outside escutcheon.

Reinstalling the reader circuit board assembly

1. *For locks with a magnetic stripe swipe card reader*, connect the reader harness to the reader circuit board and position the circuit board in the outside escutcheon.

   For locks with a proximity card reader, align the connectors on the back of the reader circuit board assembly with the reader pins. Press the board into place.

2. Loosely install the two reader electronics mounting screws.
3. Position the harness clamp under the left reader electronics mounting screw. Make sure the reader wire harness is positioned properly under the harness clamp. Tighten the screws.
4. Remove the backing from the adhesive tape and apply the tape to the back of the outside escutcheon.
5. Press the sounder in place on the tape.
6. Peel away the protective backing from the edge of the escutcheon gasket and slide the gasket onto the upper escutcheon post. Press the gasket into place on the edge of the escutcheon so the reader circuit board is covered.
7. Connect the reader wire harness to the control electronics circuit board. For mortise instructions, see *Task E. To connect the reader wire harness:* on page 3–17. For cylindrical instructions, see *Tighten the RQE rose liner on the door with the through-bolts.* on page 4–12.
8. Reinstall the outside escutcheon. For mortise instructions, see *Task F. To secure the escutcheons and complete the connections:* on page 3–20. For cylindrical instructions, see *Task G. To secure the escutcheons and complete the connections:* on page 4–15.
9. Reinstall the inside lever/knob. For mortise instructions, see *Task G. To reinstall the inside and outside levers/knobs:* on page 3–21. For cylindrical instructions, see *Task H. To reinstall the inside and outside levers/knobs:* on page 4–16.
10. Reinstall the core and throw member. For mortise instructions, see *Task H. To reinstall the core (EEL and EEU only):* on page 3–23. For cylindrical instructions, see *Task I. To reinstall the core and throw member:* on page 4–17.
11. *Making sure that the access door does not pinch any wires*, insert the tabs of the access door into its mating slots and swing the door closed. Use the appropriate bit driver to secure the access door with the security screw. Tighten firmly.

REPLACING READERS

To replace a proximity card reader assembly, the following new parts are needed:

- proximity card reader (B64404 for HID; B64403 for Motorola)
- outside escutcheon gasket (A60725).

To replace a magnetic stripe swipe card reader, the following new parts are needed:

- magnetic stripe swipe card reader (B63269)
- outside escutcheon gasket (A60725).

To replace a magnetic stripe insertion card reader, the following new part is needed:

- magnetic stripe insertion card reader (B61646).

Replacing the magnetic stripe swipe card reader

Removing the magnetic stripe swipe card reader

1. Remove the core and throw member. For mortise instructions, see *Task A. To remove the core:* on page 3–3. For cylindrical instructions, see *Task A. To remove the core and throw member:* on page 4–3.
2. Remove the inside and outside knobs/levers. For mortise instructions, see *Task B. To remove the inside and outside levers/knobs:* on page 3–4. For cylindrical instructions, see *Task B1. To remove the keyed lever/knob:* on page 4–3.
3. Use the appropriate bit driver to remove the security screw from the access door. Open the access door and remove it from the inside escutcheon.
4. Remove the outside escutcheon. For mortise instructions, see *Task D. To disconnect the connections and remove the outside escutcheon:* on page 3–6. For cylindrical instructions, see *Task D. To disconnect the connections and remove the outside escutcheon:* on page 4–4.
5. Remove the escutcheon gasket from the outside escutcheon and discard the gasket.
6. Unscrew the two reader electronics mounting screws on the reader circuit board assembly and remove the harness clamp. Save the harness clamp and screws.

Note: You can carefully set aside the reader circuit board and sounder affixed to the outside escutcheon.

7. Remove the four reader assembly mounting screws. Save the screws.

8. Remove the magnetic stripe card reader assembly from the outside escutcheon, sliding the reader harness through the slot in the escutcheon.

Note: To determine the read head track position for ordering a magnetic stripe swipe card reader, look at the back of the reader for the label that states, “This reader was factory set to reader magstripe track no. 1 2.” The track number is circled. If there is no label, the track number is 3.

Reinstalling the magnetic stripe swipe card reader

1. Orient the magnetic stripe card reader assembly and insert the reader harness through the slot in the outside escutcheon.
2. Position the magnetic stripe card reader assembly on the reader gasket and install the four reader assembly mounting screws.
3. Connect the reader harness to the reader circuit board and position the circuit board in the outside escutcheon.
4. Loosely install the two reader electronics mounting screws.
5. Position the harness clamp under the left reader electronics mounting screw. Make sure the reader wire harness is positioned properly under the harness clamp. Tighten the screws.
6. Peel away the protective backing from the edge of the escutcheon gasket and slide the gasket onto the upper escutcheon post. Press the gasket into place on the edge of the escutcheon so the reader circuit board is covered.
7. Connect the reader wire harness to the control electronics circuit board. For mortise instructions, see *Task E. To connect the reader wire harness:* on page 3–17. For cylindrical instructions, see *Tighten the RQE rose liner on the door with the through-bolts.* on page 4–12.
8. Reinstall the outside escutcheon. For mortise instructions, see *Task F. To secure the escutcheons and complete the connections:* on page 3–20. For cylindrical instructions, see *Task G. To secure the escutcheons and complete the connections:* on page 4–15.
9. Reinstall the inside lever/knob. For mortise instructions, see *Task G. To reinstall the inside and outside levers/knobs:* on page 3–21. For cylindrical instructions, see *Task H. To reinstall the inside and outside levers/knobs:* on page 4–16.
10. Reinstall the core and throw member. For mortise instructions, see *Task H. To reinstall the core (EEL and EEU only):* on page 3–23. For cylindrical instructions, see *Task I. To reinstall the core and throw member:* on page 4–17.
11. *Making sure that the access door does not pinch any wires*, insert the tabs of the access door into its mating slots and swing the door closed. Use the appropriate bit driver to secure the access door with the security screw. Tighten firmly.

Replacing the magnetic stripe insertion card reader

Removing the magnetic stripe insertion card reader

1. Remove the core and throw member. For mortise instructions, see *Task A. To remove the core:* on page 3–3. For cylindrical instructions, see *Task A. To remove the core and throw member:* on page 4–3.
2. Remove the inside and outside knobs/levers. For mortise instructions, see *Task B. To remove the inside and outside levers/knobs:* on page 3–4. For cylindrical instructions, see *Task B1. To remove the keyed lever/knob:* on page 4–3.
3. Use the appropriate bit driver to remove the security screw from the access door. Open the access door and remove it from the inside escutcheon.
4. Remove the outside escutcheon. For mortise instructions, see *Task D. To disconnect the connections and remove the outside escutcheon:* on page 3–6. For cylindrical instructions, see *Task D. To disconnect the connections and remove the outside escutcheon:* on page 4–4.
5. Unscrew the two reader electronics screws on the card reader and remove the harness clamp. Save the harness clamp and screws.
6. Disconnect the reader wire harness from the circuit board on the card reader.
7. Remove the card reader.

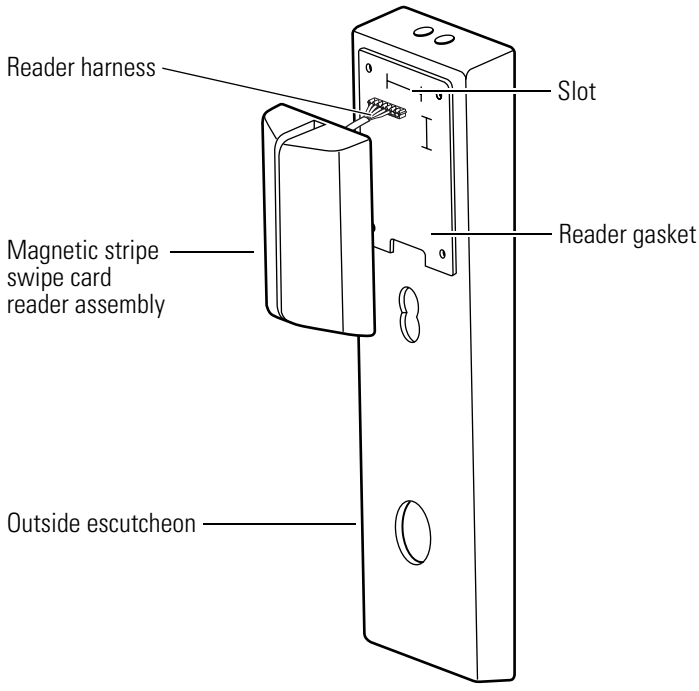


Figure 5.5 Removing and reinstalling the magnetic stripe swipe card reader

Reinstalling the magnetic stripe insertion card reader

1. Position the card reader in the outside escutcheon and secure it with the two reader electronics screws. Do not tighten the left screw.
2. Connect the reader wire harness to the circuit board on the card reader.
3. Position the harness clamp under the left reader electronics screw. Tighten the screw.
4. Connect the reader wire harness to the control electronics circuit board. For mortise instructions, see *Task E. To connect the reader wire harness:* on page 3–17. For cylindrical instructions, see *Tighten the RQE rose liner on the door with the through-bolts.* on page 4–12.
5. Reinstall the outside escutcheon. For mortise instructions, see *Task F. To secure the escutcheons and complete the connections:* on page 3–20. For cylindrical instructions, see *Task G. To secure the escutcheons and complete the connections:* on page 4–15.
6. Reinstall the inside lever/knob. For mortise instructions, see *Task G. To reinstall the inside and outside levers/knobs:* on page 3–21. For cylindrical instructions, see *Task H. To reinstall the inside and outside levers/knobs:* on page 4–16.
7. Reinstall the core and throw member. For mortise instructions, see *Task H. To reinstall the core (EEL and EEU only):* on page 3–23. For cylindrical instructions, see *Task I. To reinstall the core and throw member:* on page 4–17.
8. *Making sure that the access door does not pinch any wires*, insert the tabs of the access door into its mating slots and swing the door closed. Use the appropriate bit driver to secure the access door with the security screw. Tighten firmly.

Replacing the proximity card reader assembly

Removing the proximity card reader assembly

1. Remove the core and throw member. For mortise instructions, see *Task A. To remove the core:* on page 3–3. For cylindrical instructions, see *Task A. To remove the core and throw member:* on page 4–3.
2. Remove the inside and outside knobs/levers. For mortise instructions, see *Task B. To remove the inside and outside levers/knobs:* on page 3–4. For cylindrical instructions, see *Task B1. To remove the keyed lever/knob:* on page 4–3.
3. Use the appropriate bit driver to remove the security screw from the access door. Open the access door and remove it from the inside escutcheon.
4. Remove the outside escutcheon. For mortise instructions, see *Task D. To disconnect the connections and remove the outside escutcheon:* on page 3–6. For cylindrical instructions, see *Task D.*

To disconnect the connections and remove the outside escutcheon: on page 4–4.

5. Remove the escutcheon gasket from the outside escutcheon and discard the gasket.
6. Unscrew the two reader electronic mounting screws on the reader circuit board and remove the harness clamp. Save the harness clamp and screws.
7. Carefully pull the reader circuit board assembly straight out from the escutcheon.

Note: You can carefully set aside the reader circuit board and sounder affixed to the outside escutcheon.

8. Unscrew the four bezel mounting screws. Save the screws.
9. Remove the proximity card reader assembly from the outside escutcheon.

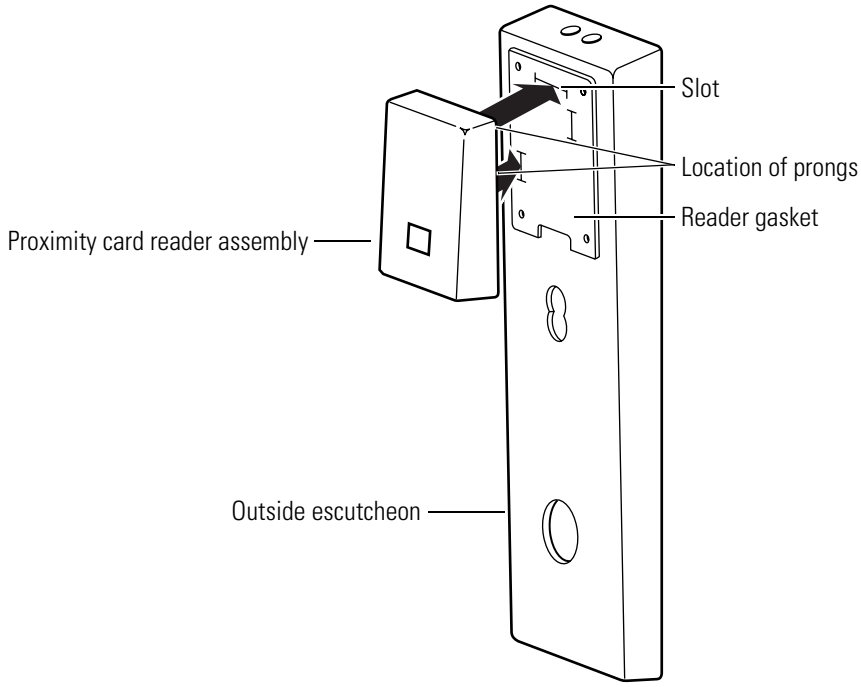


Figure 5.6 Removing and replacing the proximity card reader

Reinstalling the proximity card reader assembly

1. Orient the proximity card reader assembly and insert the pins through the slots in the outside escutcheon.
2. Position the proximity card reader assembly on the reader gasket and install the four bezel assembly mounting screws.
3. Align the connectors on the back of the reader circuit board assembly with the reader pins. Press the board into place.
4. Loosely install the two reader electronics mounting screws.

5. Position the harness clamp under the left reader electronics mounting screw. Make sure the reader wire harness is positioned properly under the harness clamp. Tighten the screws.
6. Peel away the protective backing from the edge of the escutcheon gasket and slide the gasket onto the upper escutcheon post. Press the gasket into place on the edge of the escutcheon so the reader circuit board is covered.
7. Connect the reader wire harness to the control electronics circuit board. For mortise instructions, see *Task E. To connect the reader wire harness:* on page 3–17. For cylindrical instructions, see *Tighten the RQE rose liner on the door with the through-bolts.* on page 4–12.
8. Make the connections and reinstall the inside escutcheon. For mortise instructions, see *Task F. To secure the escutcheons and complete the connections:* on page 3–20. For cylindrical instructions, see *Task G. To secure the escutcheons and complete the connections:* on page 4–15.
9. Reinstall the outside escutcheon. For mortise instructions, see *Task F. To secure the escutcheons and complete the connections:* on page 3–20. For cylindrical instructions, see *Task G. To secure the escutcheons and complete the connections:* on page 4–15.
10. Reinstall the inside lever/knob. For mortise instructions, see *Task G. To reinstall the inside and outside levers/knobs:* on page 3–21. For cylindrical instructions, see *Task H. To reinstall the inside and outside levers/knobs:* on page 4–16.
11. Reinstall the core and throw member. For mortise instructions, see *Task H. To reinstall the core (EEL and EEU only):* on page 3–23. For cylindrical instructions, see *Task I. To reinstall the core and throw member:* on page 4–17.
12. *Making sure that the access door does not pinch any wires*, insert the tabs of the access door into its mating slots and swing the door closed. Use the appropriate bit driver to secure the access door with the security screw. Tighten firmly.

REPLACING THE PANEL INTERFACE CIRCUIT BOARD

1. Disconnect the connections running from the panel interface module to the wire transfer hinge and the connections from the panel interface module to the access control panel/reader interface.
2. Slide the panel interface circuit board out of the panel rail.
3. Slide the new panel interface circuit board into the panel rail.
4. Reconnect the connections running to the wire transfer hinge and the access control panel/reader interface. For instructions, see the appropriate installation instructions in Appendix B.
5. Set the DIP switches on the panel interface circuit board. For instructions, see the appropriate installation instructions in Appendix B.

A GLOSSARY

Anti-friction latch — A latchbolt designed to reduce friction between the main latchbolt and strike.

Armored front — The mortise lock front and faceplate designed to prevent tampering with the cylinder clamp screw and case mounting screws.

Auxiliary dead latch — A latch that prevents the latchbolt from being loided when the door is closed. See *Loiding.*

Backset — The distance from the faceplate to the center of the cylinder or lever/knob.

Cam — See *Cylinder cam.*

Card reader — A device that reads the information encoded on magnetic stripe cards or proximity cards.

Core — See *Interchangeable core.*

Cylinder — See *Mortise cylinder.*

Cylinder cam — A rotating part of a keyed cylinder that drives the deadbolt or latchbolt.

Cylinder ring — A metal ring that fits around the cylinder and protects it from tampering. The cylinder ring also spaces the cylinder out to the right position.

Door bevel — The angle on the edge of a door.

Door status sensor — A sensor that monitors whether the door is open or closed. This sensor is used to detect a forced entry, or a door that is propped open.

Escutcheon — A surface-mounted plate that covers holes that were made in the door for knobs and cylinders.

Faceplate A finished part of a mortise lock that covers the armored front. See *Armored front.*

Figure-8 The basic shape of the interchangeable core and its housing (door knob, cylinder, padlock, etc.). See also *Interchangeable core*.

Hand of door The swing direction of the door as viewed from the outside of the door. A right-handed (RH) door is hinged on the right and swings inward. A left-handed (LH) door is hinged on the left and swings inward. If either of these doors swings outward, it becomes a right-hand reverse bevel (RHRB) door, or a left-hand reverse bevel (LHRB) door respectively.

High edge of door bevel The edge of the door that is closer to the frame.

Interchangeable core A figure-8 shaped device that contains all mechanical parts for a masterkeyed system. The interchangeable core can be removed by a special control key and can be recombinated without disassembling the lock. See also *Figure-8.*

Key override An optional feature that enables an authorized user (in an emergency) to bypass all electronic locking features, and open the lock with a mechanical key.

Latchbolt status sensor A sensor that monitors whether the latchbolt is extended or retracted. This sensor can be used in combination with the door status sensor to determine whether the door is fully secure.

LED Light Emitting Diode. Indicates the status of the electronic lock to the user.

Life Safety Code® A document, developed by the National Fire Protection Association (NFPA) that regulates building construction to prevent injury in case of fire. Code sections 2-4, and 5-2.1.5 apply to locks and latches.

Lock function The way a lock operates.

Loiding A burglary attack method that uses a credit card-like object. This object is inserted between the door and the frame to separate the latchbolt from the strike.

Magnetic stripe card A credit-card shaped device to which data is encoded in the form of a magnetically encoded strip of tape.

Mortise cylinder A threaded lock cylinder that screws directly into the lock case. A key-driven rotating cam, attached to the back, drives the locking mechanism.

Mortise A rectangular cavity cut into the edge of a door. Also can mean the act of making such a cavity.

Mortise lock A lock that fits into a mortise. Other locks fit into bored holes or mount to a surface. See also *Mortise.*

Removable core See *Interchangeable core.*

Request-to-exit (RQE) A switch that allows the user to exit without setting off an alarm. Electrified and IDH Max Locks can be supplied with an internal request-to-exit switch. Turning the inside knob or lever actuates the switch and, when wired to an alarm system, sends a signal to disable or sound an alarm, start a timer, etc.

Reverse bevel See *Hand of door.*

Solenoid A component that operates the locking mechanism of the lock.

Sounder The device in the lock that produces sound. The sounder annunciates when access is denied.

Spanner wrench A wrench used to tighten a rose ring onto a door.

Swing See *Hand of door.*

Template A precise, detailed hole pattern that serves as a guide for the mortising and drilling of doors and frames.

Wire harness A group of wires bundled together with connectors at either end.

B

INSTALLATION INSTRUCTIONS

The following pages contain:

- *Installation Instructions for 34HW–35HW IDH Max Mortise Locks*
- *Installation Instructions for 83KW/93KW–85KW/95KW IDH Max Cylindrical Locks.*

Installation Instructions for 34HW–35HW IDH Max Mortise Locks

Overview

The 34HW–35HW IDH Max Mortise Lock provides the following features in an integrated lock, eliminating the need to install separate sensors in and around the door frame:

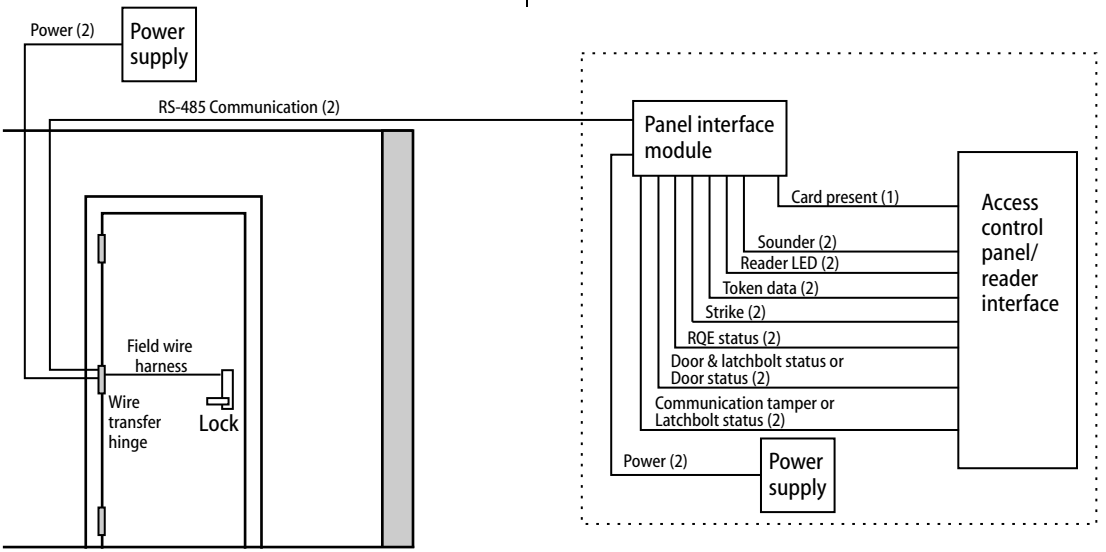
- electrified locking mechanism
- electronic token reader
- integrated trim
- door status detection
- latchbolt status detection
- ability to exit without triggering an alarm
- compatibility with varied access control panels/ reader interfaces.

Note: *For a list of compatible access control panels/ reader interfaces, contact your local BEST representative.*

A panel interface module is provided with the lock. The panel interface module receives token data and lock sensor data from the lock through an RS-485 connection. It translates this data into parallel signals, which it sends to the access control panel/reader interface. The panel interface module also translates control signals received from the access control panel/reader interface and sends them to the lock. The figure below shows the relationship between the components in the IDH Max system.

Contents

These installation instructions describe how to install, wire, and configure the components provided with your 34HW–35HW IDH Max Mortise Lock. The following topics are covered.



Site survey

Use the following survey to record information about the installation site. You need this information to determine field wiring needs, select a power supply, and determine how to prepare the door for the lock.

Lock information

Lock function:

- ❑ EEL–Electrically locked with key
- ❑ EEU–Electrically unlocked with key
- ❑ NEL–Electrically locked without key
- ❑ NEU–Electrically unlocked without key

Power source for lock:

- ❑ Separate power supply
- ❑ Power provided through panel interface module

Power source for panel interface module:

- ❑ Separate power supply
- ❑ Power provided through access control panel

Distance of lock site from lock power source: _____ feet

Distance of lock site from panel interface module site: _____ feet

Door information

Door handing and bevel:

- ❑ Left hand (LH)
- ❑ Left hand, reverse bevel (LHRB)
- ❑ Right hand (RH)
- ❑ Right hand, reverse bevel (RHRB)

Door thickness: _____ inches (1 3/4″ – 3″)

Environment information

Ambient temperature:

- ❑ Is within specifications. See the tables below.

This product meets the following Locked Door Outdoor test requirements for ANSI/BHMA 156.25:

Side of door	Range
Inside	+66°F to +74°F (+19°C to +23°C)
Outside	–31°F to +151°F (–35°C to +66°C)

This product meets the following Full Indoor test requirements for ANSI/BHMA 156.25:

Side of door	Range
Inside and outside	+32°F to +120°F (0°C to +49°C)

Components checklist

Use the following checklist to make sure that you have the items necessary to install the components provided with your 34HW–35HW IDH Max Mortise Lock.

Components provided in the box:

- ❑ Mortise case assembly
- ❑ Mortise case faceplate
- ❑ Inside escutcheon assembly with field wire harness
- ❑ Inside escutcheon access door
- ❑ Outside escutcheon assembly
- ❑ Inside and outside mounting plates
- ❑ Inside knob/lever
- ❑ Outside knob/lever & spindle assembly
- ❑ Cylinder assembly (for use with EEL and EEU functions only)
- ❑ Mortise screw package
- ❑ Trim hole insert package
- ❑ Plastic bushing package
- ❑ Escutcheon screw package
- ❑ Panel interface module
- ❑ Strike
- ❑ Strike box with magnet
- ❑ Spacer (for 6-pin cores)
- ❑ Bar code ID sticker (for your records)

Other items you'll need:

- ❑ Power supply for one IDH Max Mortise Lock (if you're providing a separate power supply): regulated; 12 volts DC at 1.1 amps

  Note: *If you intend to power more than one lock with the same power supply, calculate the amperage for the power supply by multiplying 1.1 by the number of IDH Max Mortise Locks (.85 by the number of IDH Max Cylindrical locks).*
- ❑ Power supply for the panel interface module (if you're providing a separate power supply): 12 volts DC at .1 amp
- ❑ Wire transfer hinge: 8 conductors min.; 28 AWG min.

continued

Components checklist

❑ Field wiring for power connections between the lock and power supply or the lock and panel interface module.

If you're powering the lock(s) through the panel interface module, calculate the total length of the power wire run by summing:

- The distance from the power supply to the panel interface module.
- The distance from the panel interface module to the first door.
- If powering more than one door daisy-chained to the same power supply, add the total distance of the power runs between the doors.

If you're powering the lock(s) using a separate power supply, calculate the total length of the power wire run by summing:

- The distance from the power supply to the first door.
- If powering more than one door daisy-chained to the same power supply, add the total distance of the power runs between the doors.

Refer to the table below to determine the minimum wire gauge based on the number of doors sharing the power supply and the total length of the wire run.

Maximum wire length based on no. of doors daisy-chained to power supply				Minimum wire gauge
1 door	**2 doors**	**3 doors**	**4 doors**	
250 feet	125 feet	75 feet	60 feet	18 AWG
400 feet	200 feet	130 feet	100 feet	16 AWG
600 feet	300 feet	185 feet	150 feet	14 AWG

❑ Field wiring for RS-485 communication connections between the lock and panel interface module (4000 feet maximum):
Category 5, shielded twisted pair; 24 AWG min.

Special tools checklist

Use the following checklist to make sure that you have the special tools necessary to install the components provided with your 34HW–35HW IDH Max Mortise Lock.

❑ Three (3) to four (4) foot, 3/8″ drill bit

❑ T15 TORX® bit driver‡

‡ TORX is a registered trademark of the Camcar Division of Textron.

Preparing the door and door jamb

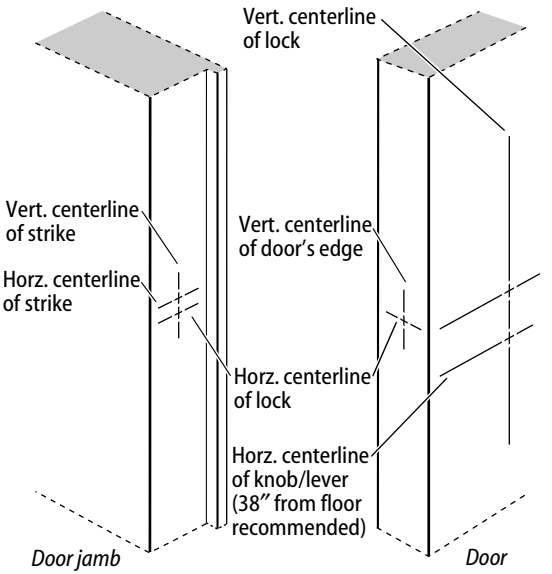


Figure 1 Marking the centerlines

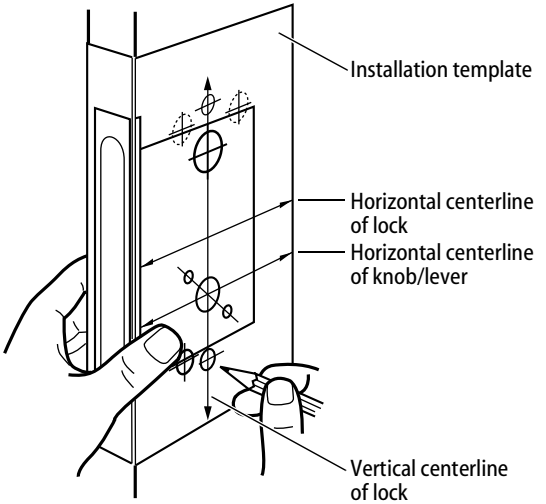


Figure 2 Positioning the template

1 Mark centerlines

Note: *If the door is a fabricated hollow metal door, determine whether it is properly reinforced to support the lock. If door reinforcement is not adequate, consult the door manufacturer for information on proper reinforcement. For dimensions for preparing metal doors, see the* W13 Template—Installation Specifications for 34HW–35HW IDH Max Mortise Locks.

1 On the door, measure and mark the height of the centerline of the knob/lever from the floor (38″ recommended). On both sides of the door, on the door's edge, and on the door jamb, mark the horizontal centerline of the lock 1 1/2″ above the centerline of the knob/lever.

Note: *If the door is a LH or RH door, mark the inside of the door. If the door is a LHRB or RHRB door, mark the outside of the door.*

2 On the door's edge and door jamb, mark the vertical centerline of the lock.

3 Measure and mark the backset (2 3/4″ standard) from the vertical centerline on the door's edge. On both sides of the door, mark the vertical centerline of the lock.

4 On the door jamb, mark the horizontal centerline of the strike 3/8″ above the horizontal centerline of the lock.

2 Position template and mark drill points

1 Cut the *W15 Template—Installation Template for* 34HW–35HW *IDH Max Mortise Locks* along the dashed lines and align the horizontal and vertical arrows with the marked centerlines on the door.

2 Tape the template to the door.

3 Center punch the necessary drill points. Refer to the instructions on the template.

Preparing the door and door jamb

3 Mortise for lock case and faceplate

1 Mortise the edge of the door for the lock case.

Note: *The mortise cavity depth of 4 5/8″ includes clearance for wiring behind the mortise case.*

2 Insert the lock in the mortise cavity.

3 Mark the outline of the lock faceplate.

4 Remove the lock. Mortise to fit the faceplate.

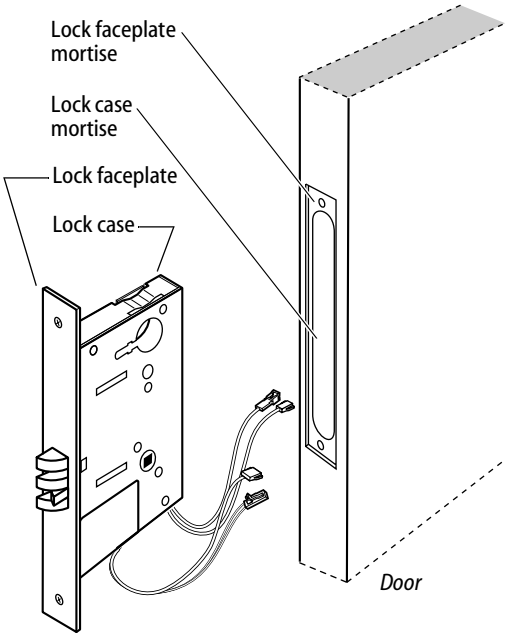


Figure 3 Mortising for the lock case and faceplate

Preparing the door and door jamb

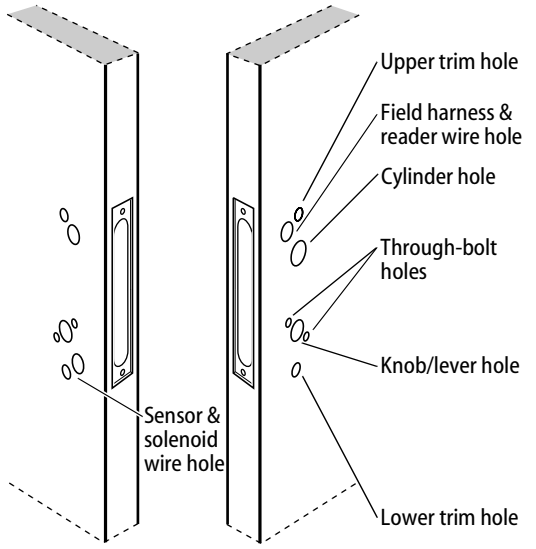


Figure 4a Drilling the RH and RHRB holes

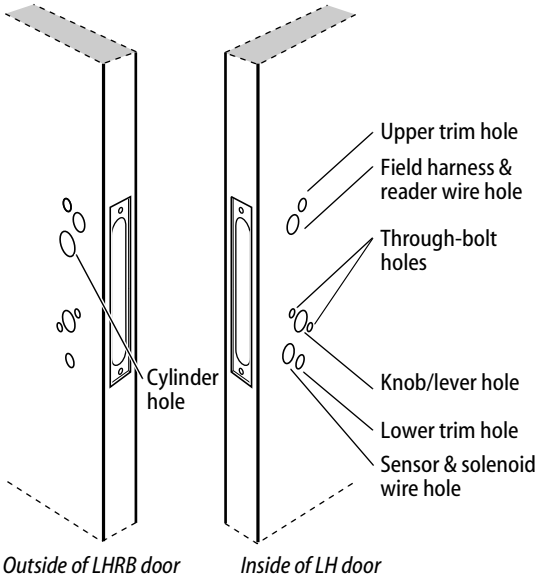


Figure 4b Drilling the LH and LHRB holes

4 Drill holes

Caution: **Check for the correct lock function, hand, and bevel before drilling.**

Drill the holes listed below:

- upper and lower trim holes
  — 5/8″ diameter
  — through door
- field harness & reader wire hole
  — 7/8″diameter
  — through door
  — location based on handing
- cylinder hole
  — 1 1/4″diameter
  — from outside into mortise cavity
  — EEL and EEU functions only
- upper and lower through-bolt holes
  — 3/8″ diameter
  — through door
- knob/lever hole
  — 7/8″ diameter
  — through door
- sensor & solenoid wire hole
  — 7/8″ diameter
  — from inside into mortise cavity, approximately 1″ deep

Note 1: *To locate the center of a hole on the opposite side of the door, drill a pilot hole completely through the door.*

Note 2: *For holes through the door, it is best to drill halfway from each side of the door to prevent the door from splintering.*

Preparing the door and door jamb

5 Drill hole for field wire harness

Caution 1: **Check with your local fire marshal before drilling a fire-rated door. Drilling through a fire-rated door may void the fire label.**

Caution 2: **Be careful to drill straight through the door, making sure the drill does not break through the face of the door.**

1 Remove the hinge nearest to the mortise cavity.

2 Using a three (3) to four (4) foot drill bit, drill a 3/8″ diameter hole through the upper back of the mortise cavity to the center of the nearest hinge mortise.

Note: *It may be easier to drill halfway from each side of the door.*

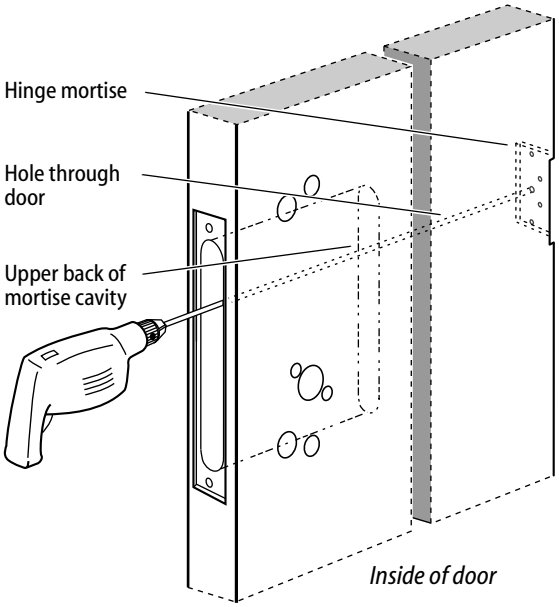


Figure 5 Drilling the hole for the field wire harness

6 Prepare for wire transfer hinge and run field wiring

1 Drill a wire access hole through the frame side of the hinge mortise.

2 Drill holes (or pockets) for splice connectors in the frame and door. Refer to the hinge manufacturer's specifications for the hole location.

3 De-burr the holes to prevent damage to the hinge leads.

4 Run the power field wiring from the location for the lock's power supply to the location for the wire transfer hinge.

5 Run the communication field wiring from the location for the panel interface module to the location for the wire transfer hinge.

Note: *For an overview of the system, see the figure on page 1. For specifications for power and communication field wiring, see* Components checklist, *on page 2.*

6 Pull the field wiring down the wall and through the access hole in the frame.

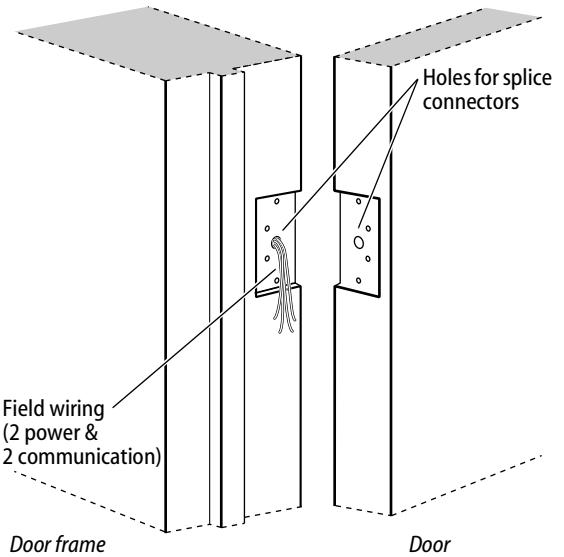


Figure 6 Preparing for the wire transfer hinge

Installing the lock

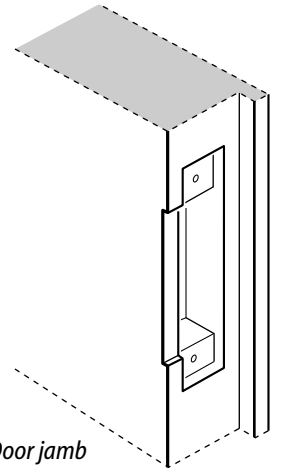


Figure 7 Mortising the door jamb for the strike box and strike plate

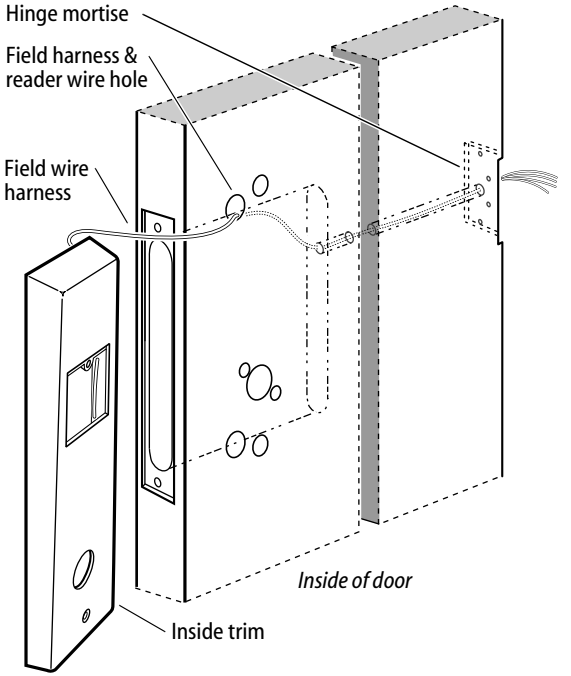


Figure 8 Pulling the field wire harness through the door

7 Mortise for strike box and strike plate

1 On the door jamb, locate the horizontal centerline of the strike (3/8″ above the centerline of the lock), as well as the vertical centerline of the strike.

2 Mortise the door jamb to fit the strike box and strike plate.

8 Pull field wire harness through door

1 Feed the field wire harness (connected to the inside trim) into the field harness & reader wire hole and down into the mortise cavity.

2 From the hinge edge of the door, fish the field wire harness through the door to the hinge mortise.

Note: *You can let the inside trim dangle from the field wire harness while completing tasks 9 through 13.*

Installing the lock

9 Install mortise case

1 Remove the faceplate from the mortise case.

2 Insert the mortise case into the mortise cavity, while feeding the sensor and solenoid wires into the mortise cavity and out the sensor & solenoid wire hole to the inside of the door.

Note: *The field wire harness should be routed above and behind the mortise case (depending on where the hole through the door meets the mortise cavity).*

3 Make sure there are 3″ to 4″ of slack in the field wire harness to allow access to the control electronics circuit board in the inside trim.

4 Secure the mortise case with the case mounting screws.

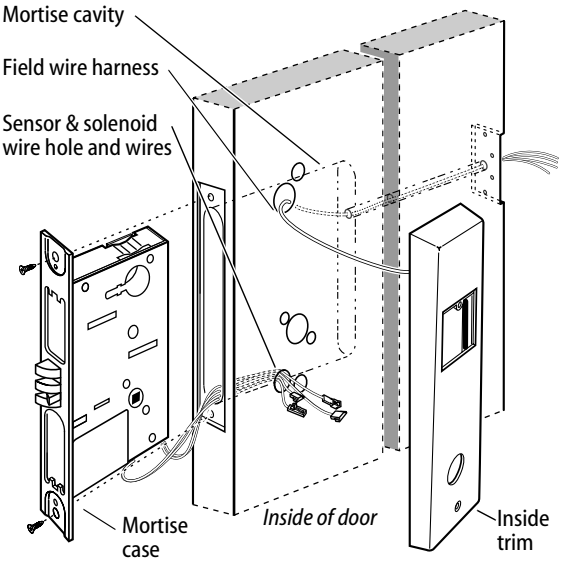


Figure 9 Installing the mortise case

10 Install mounting plates

1 Insert the outside mounting plate through the door and mortise case.

2 Position the inside mounting plate opposite the outside mounting plate and screw them securely in place.

Caution: **Do not overtighten the mounting plate screws. Overtightening may compress the mortise cavity and bind the locking mechanism.**

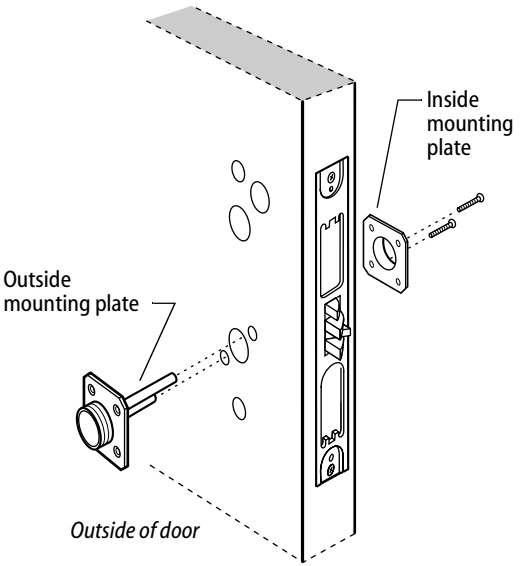


Figure 10 Installing the mounting plates

Installing the lock

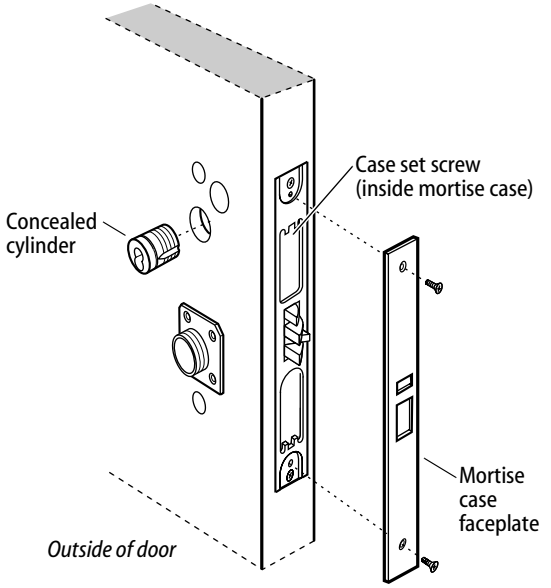


Figure 11 Installing the cylinder and mortise case faceplate

11 Install cylinder and mortise case faceplate

Note: *Install the cylinder for EEL and EEU function locks only.*

1 Thread the concealed cylinder into the mortise case so that the groove around the cylinder head is even with the door surface. Adjust the cylinder depth plus or minus one (1) turn so that the core, when installed in the cylinder, is flush with the outer surface of the trim.

Caution: **A malfunction can occur if the cylinder is threaded in too far.**

2 Secure the cylinder in the mortise case with the case set screw.

3 Secure the mortise case faceplate to the mortise case with the faceplate mounting screws.

4 Check the cylinder and lock for proper operation.

Installing the lock

12 Install trim hole inserts and bushings

1 Insert the two trim hole inserts into the upper trim hole on each side of the door, as shown in Figure 12.

2 Insert two bushings into the field harness & reader wire hole on each side of the door, as shown in Figure 12.

3 Insert a bushing into the sensor & solenoid wire hole on the inside of the door, as shown in Figure 12.

Note: *You do **not** need to change the positions of the DIP switches on the control electronics circuit board located in the inside escutcheon.*

- *By default, switches 1 through 5 are set to ON. These switches are for possible future applications.*
- *By default, switches 6 and 7 are set to ON for automatic baud rate detection. This setting lets you determine the baud rate for communication between the lock's control electronics circuit board and the panel interface module by setting DIP switches on the panel interface circuit board. (See page 21.)*
- *Switch 8 is set to OFF for locks with a swipe-type magnetic stripe card reader, a proximity reader, or a keypad reader; it is set to ON only for locks with an insertion-type magnetic stripe card reader.*

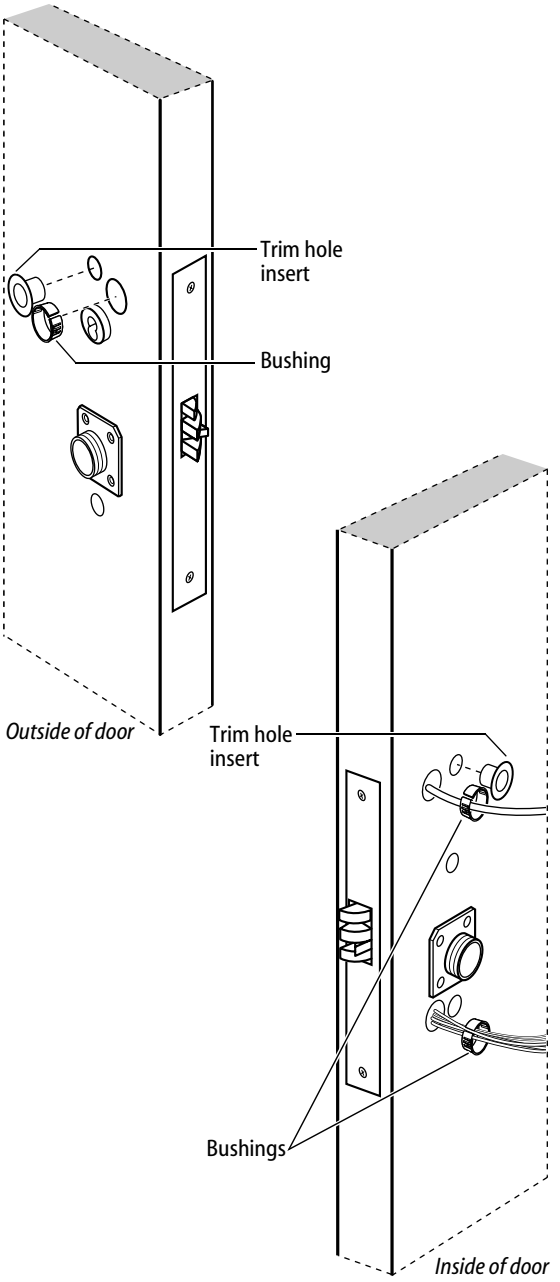


Figure 12 Installing the trim hole inserts and bushings

13 Connect reader wire harness

1 From the outside of the door, feed the reader wire harness connector through the field harness & reader wire hole.

2 Temporarily rest the outside trim on the door by inserting the trim studs into the stud holes.

Note: *You can temporarily install the outside knob/lever to hold the outside trim in place. See Task 15.*

3 Connect the reader wire harness to the control electronics circuit board in the inside trim.

4 Feed the solenoid and sensor wire harness from the control electronics circuit board, as well as the solenoid and sensor wires from the mortise case, through the large opening in the inside trim.

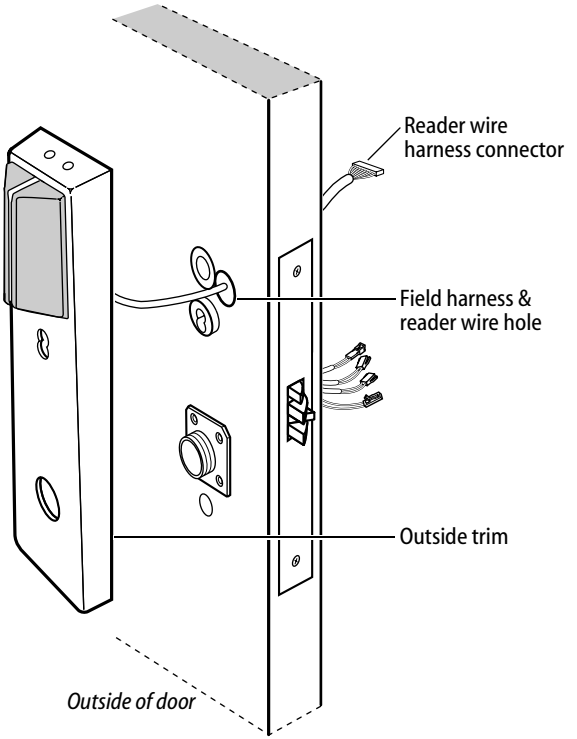


Figure 13a Feeding the reader wire harness connector from the outside trim through the door

Caution 1: **When routing the reader wire harness, make sure the reader wire harness is not routed across any sharp edges or over any surface that could damage its sleeving or wire insulation.**

Caution 2: **When connecting the reader wire harness, make sure:**

- **there are no loose wire connections where the wires are inserted into the reader wire connector**
- **the reader wire harness connector is fully seated in its mating connector on the control electronics circuit board.**

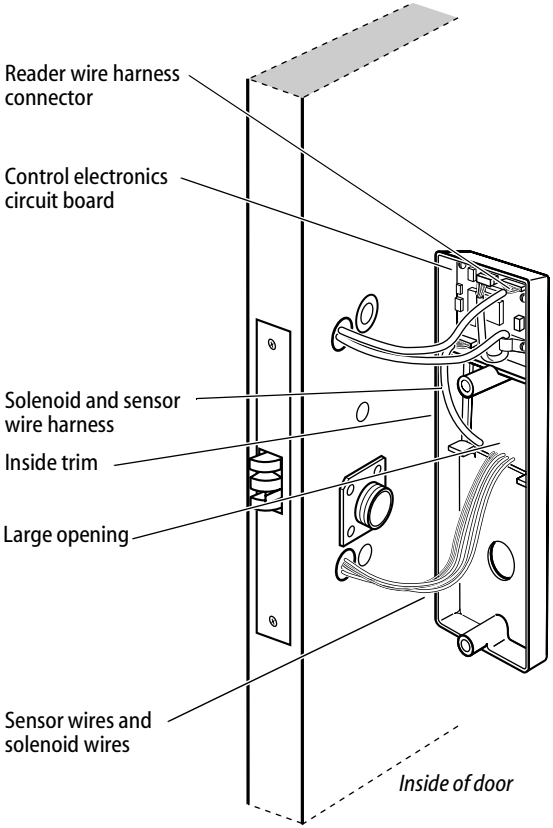


Figure 13b Connecting the reader wire harness to the control electronics circuit board

Completing the installation at the door

14 Secure through-bolt trim and complete connections

1 Position the inside and outside trim onto the door.

2 **Making sure that the trim does not pinch the wires**, secure the trim to the door—but do not tighten. Use the combination mounting screw at the top trim hole and the standard mounting screw at the bottom trim hole.

Caution: **When routing the solenoid and sensor wire harness, the sensor wires, and the solenoid wires, make sure the wires are not routed across any sharp edges or over any surface that could damage their sleeving or wire insulation.**

3 Make the solenoid connection and three sensor connections, and place the wires into the inside trim.

Wire connection	Color	No. of wires	No. of pins
Solenoid	Yellow	2	3
RQE	Brn/Org	2	3
Shorting connection	Purple	2	2
Door status sensor	White	2	2

Caution: **When making the sensor connections and solenoid connection, make sure:**

- **there are no loose wire connections where the wires are inserted into the connectors**
- **the connectors are firmly mated.**

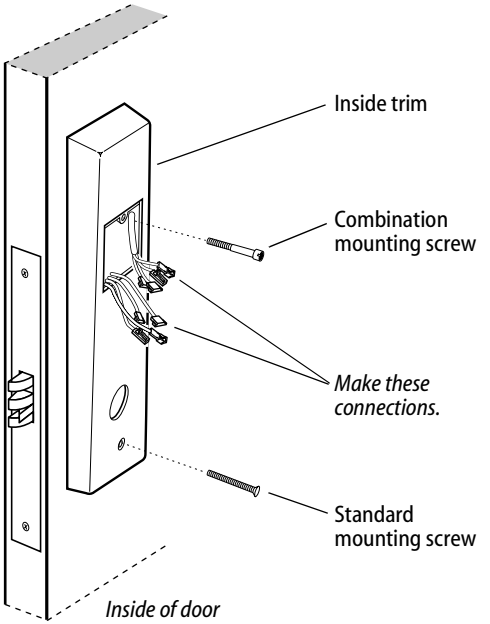


Figure 14 Securing the through-bolt trim and completing connections

Completing the installation at the door

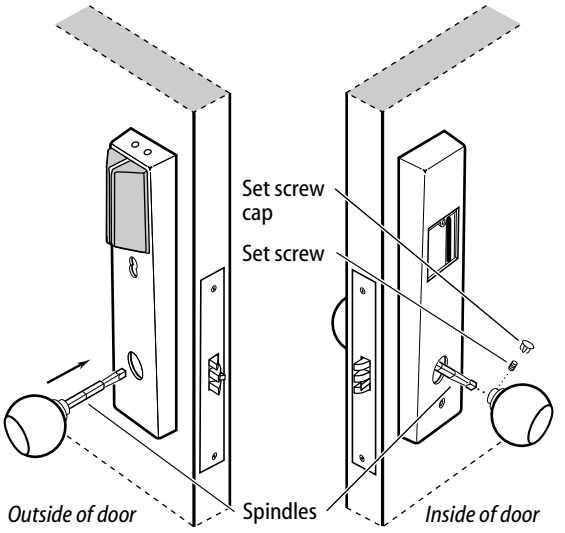


Figure 15a Installing the knobs

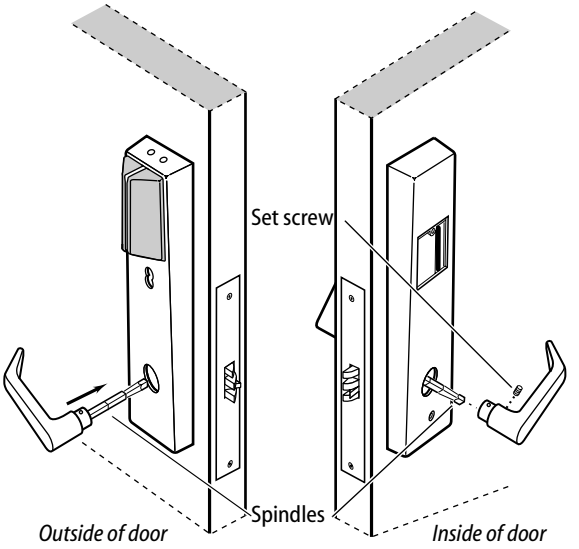


Figure 15b Installing the levers

15 Install inside and outside knobs/levers

For both knobs and levers

Unscrew the inside spindle one (1) full turn to allow the spindles to turn freely.

For knobs

1 From the outside of the door, insert the outside knob and spindles assembly into the lockset.
2 Slide the inside knob onto the inside spindle and secure it with the set screw.
3 Push the set screw cap into the set screw hole.
4 Tighten the trim mounting screws.
5 Turn the knobs to check that they operate smoothly.

For levers

1 With the handle pointing toward the door hinges, insert the outside lever and spindles assembly into the lock from the outside of the door.
2 Slide the inside lever onto the inside spindle and secure it with the set screw.
3 Tighten the trim mounting screws.
4 Turn the levers to check that they operate smoothly.

Completing the installation at the door

16 Install core (EEL and EEU only)

1 Insert the control key into the core and rotate the key 15 degrees to the right.
2 With the control key in the core, insert the core into the cylinder.
3 Rotate the control key 15 degrees to the left and withdraw the key.

Caution: **The control key can be used to remove cores and to access doors. Provide adequate security for the control key.**

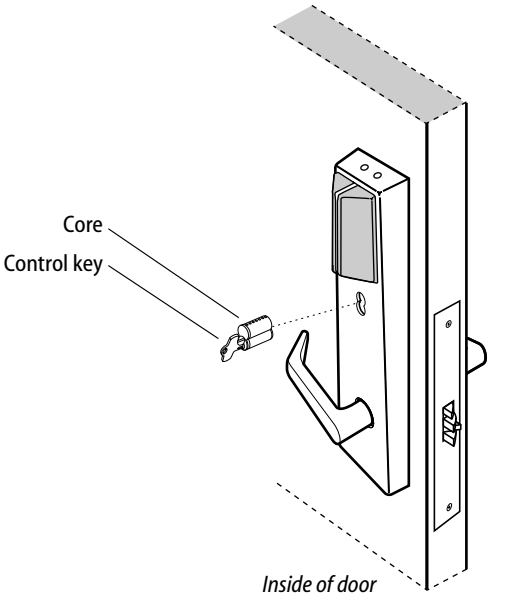


Figure 16 Installing the core

17 Install access door

1 **Making sure that the access door does not pinch any wires**, insert the tabs of the access door into its mating slots and swing the door closed.
2 Use a T15 TORX bit driver to secure the access door with the security screw. Tighten firmly.

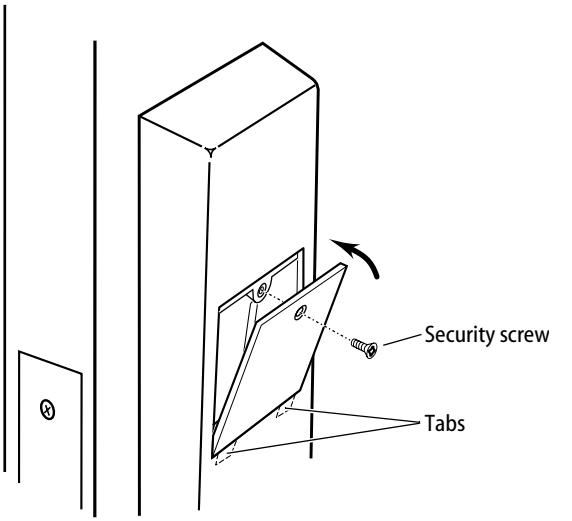


Figure 17 Installing the access door

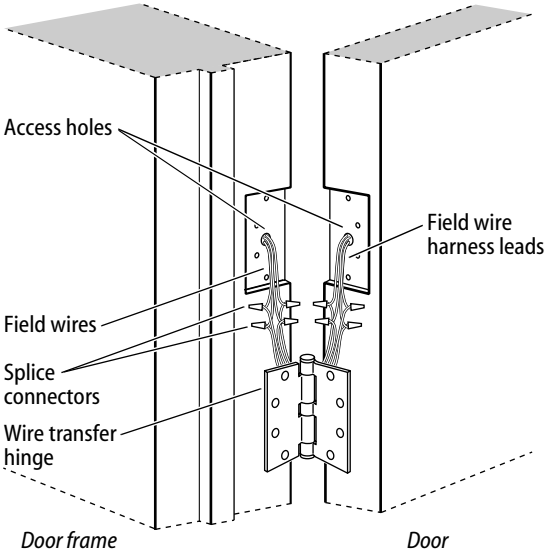


Figure 18 Installing the wire transfer hinge

18 Install wire transfer hinge

1 Trim the four wires of the field wire harness, which you pulled through the hinge edge of the door in Task 8. Leave sufficient length to connect to the wire transfer hinge.

2 Splice the power and communication field wiring to the four pairs of leads on the frame side of the hinge, following the hinge manufacturer's instructions.

3 Splice the four field wire harness wires (listed in the table below) to the four pairs of leads on the door side of the hinge, matching each pair of leads to its corresponding field wire.

Wire	Color
Ground	Black
12 VDC	Red
Com+	Orange
Com–	Green

4 Insert the wires and splice connectors into the holes or pockets in the door and frame, being careful not to pinch the wires. Install the wire transfer hinge.

Completing the installation at the door

19 Install strike box and strike plate

1 Insert the strike box into the mortise in the door jamb. Place the strike plate over the strike box and secure the strike with the screws provided.

2 Check the position of the auxiliary bolt against the strike plate.

Caution: **The auxiliary bolt must make contact with the strike plate. The auxiliary bolt deadlocks the latchbolt and prevents someone from forcing the latch open when the door is closed. If the incorrect strike is installed, a lock-in can occur.**

Note: *The recommended gap between the door and jamb is 1/8".*

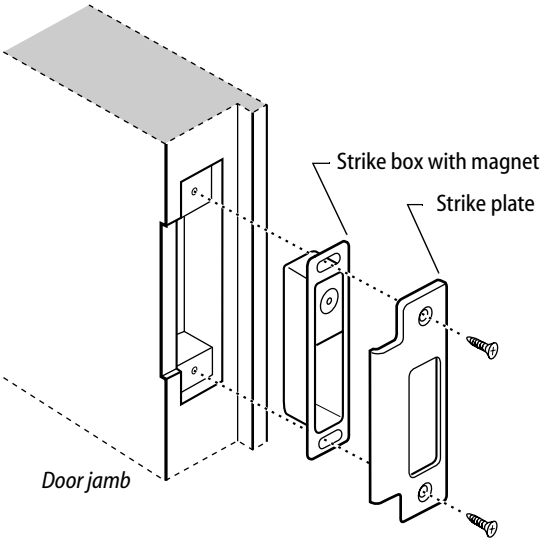


Figure 19a Installing the strike box and strike plate

20 Install lock power supply (optional)

If you are providing a separate power supply for the lock, instead of providing power via the panel interface module, connect the two power field wires (run from the wire transfer hinge) to the power supply. Make sure power (12 volts DC) and ground are connected properly.

Follow the instructions provided by the power supply manufacturer. Do not plug in the power supply yet.

Note: *For specifications for the power supply, see* Components checklist*, on page 2.*

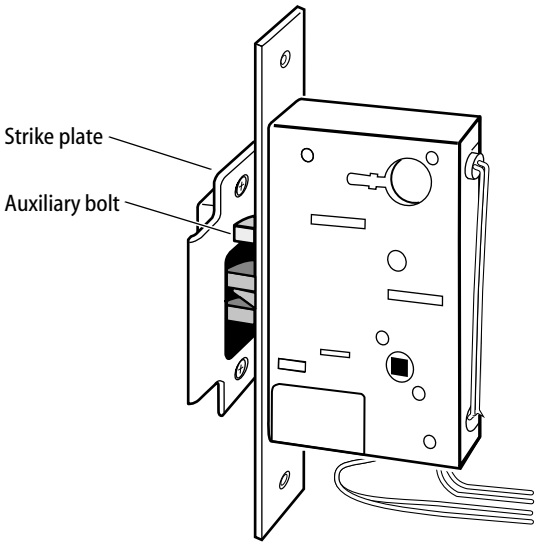


Figure 19b Positioning the strike

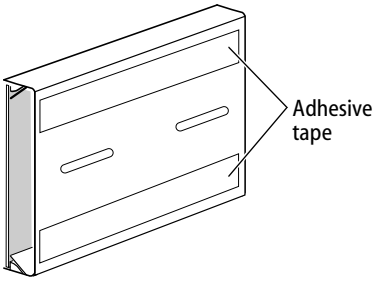


Figure 20 Mounting the panel interface module

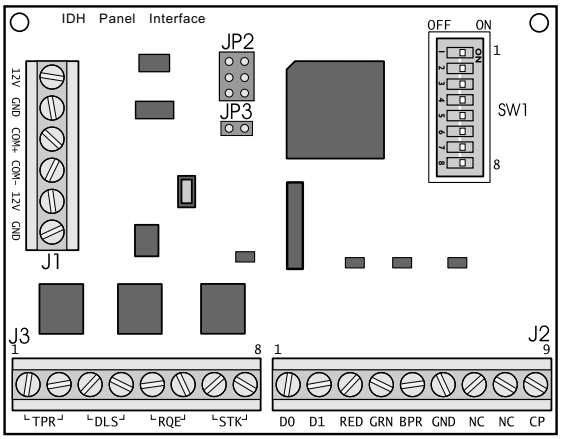


Figure 21a Panel interface circuit board

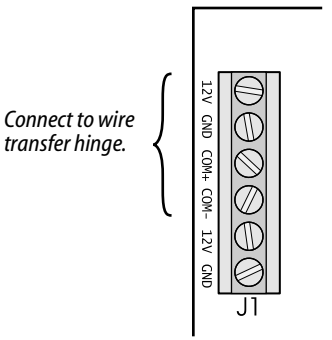


Figure 21b Connecting field wiring from the wire transfer hinge

21 Mount panel interface module

Peel the paper off the adhesive tape affixed to the back of the panel rail and press the panel rail into position.

Note: *Mount the panel interface module in the enclosure with the access control panel/reader interface, if possible.*

22 Connect field wiring from wire transfer hinge to panel interface module

1 Connect the two communication field wires (run from the wire transfer hinge) to the COM+ and COM– terminals on the panel interface circuit board.

Note: *The field wire harness leads, connected to the door side of the wire transfer hinge, are described in the table below.*

Wire	Color
Ground	Black
12 VDC	Red
Com+	Orange
Com–	Green

2 If you are providing power to the lock through the panel interface module, connect the two power field wires (run from the wire transfer hinge) to the 12V and GND terminals on the panel interface circuit board.

Note: *JP2 and JP3, shown in Figure 21a, are used for manufacturing purposes only.*

3 Connect the RS-485 shield wire to one of the GND terminals on J1.

Installing the panel interface module

23 Connect panel interface module to access control panel/reader interface

With power removed from the panel interface circuit board and the access control panel/reader interface, connect the wiring between the panel interface circuit board and the access control panel. Refer to the table below.

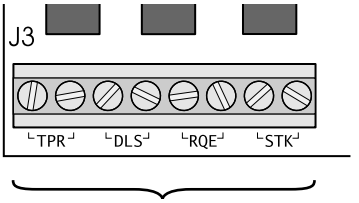


Figure 22a Connecting to the access control panel/ reader interface

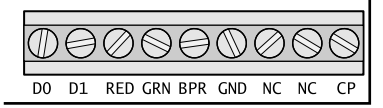
Connecting to the access control panel/reader interface

Terminals	Description	Related DIP switches
TPR (on J3) Communication tamper output *or* Latchbolt status output	Switch-like output to the access control panel/reader interface that is configured using DIP switch 8 to serve one of two possible functions: **Option 1—Communication tamper output:** Indicates the status of the communication connection between the panel interface circuit board and the lock's control electronics circuit board. By default, the output is closed to indicate communication is OK and open to indicate communication has been interrupted. **Option 2—Latchbolt status output:** Indicates the state of the lock's latchbolt status switch. By default, the output is closed to indicate the latchbolt status switch is closed. **Note:** *The lock's latchbolt status switch is closed when the latchbolt is extended.*	**DIP switch 8** configures the function of this output. **DIP switch 6** provides the ability to invert the signal.
DLS (on J3) Door status & latchbolt status output *or* Door status output	Switch-like output to the access control panel/reader interface that is configured using DIP switch 8 to serve one of two possible functions: **Option 1—Door status & latchbolt status output:** Indicates whether the door is secure (both the door status and latchbolt status switches are closed) or unsecure (one or both of these switches are open). By default, the output is closed to indicate the door is secure. **Option 2—Door status output:** Indicates the state of the lock's door status switch. By default, the output is closed to indicate the door status switch is closed. **Note:** *The lock's door status switch is closed when the door is closed.*	**DIP switch 8** configures the function of this output. **DIP switch 5** provides the ability to invert the signal.
RQE (on J3) Request-to-exit status output	Switch-like output to the access control panel/reader interface that indicates the status of the lock's RQE switch. By default, the output is closed to indicate the RQE switch is closed. **Note:** *The lock's RQE switch is closed when the door knob/lever is turned, activating the switch.*	**DIP switch 4** provides the ability to invert the signal.
STK (on J3) Strike input	Input from the access control panel's/reader interface's strike relay, which provides the solenoid control signal. The access control panel/reader interface output usually has normally open (NO) and normally closed (NC) terminals, as well as a common terminal. The common and NO terminals should be connected to the two STK terminals on J3. To invert the operation, use the access control panel's/reader interface's common and NC terminals. The operation of the solenoid varies by lock function. See the *W Series Service Manual* (T60775).	None

continued

Terminals	Description	Related DIP switches
D0, D1, & CP (on J2) Token data output	D0 is the Data 0 (Wiegand) or Strobe (ABA) token data output to the access control panel/reader interface. D1 is the Data 1 (Wiegand) or Data (ABA) output. D0 and D1 are capable of transmitting up to 250 feet. **Note:** *The strobe signal is sometimes called 'clock'.* CP is the Card Present (ABA) output. The card present signal is low (0 volts DC) during output of ABA token data.	None
RED & GRN (on J2) Reader LED input	Input for the red and green LED control signal(s) from the access control panel/reader interface. This input is configured using DIP switch 1 for either one-wire LED operation or two-wire LED operation. **Two-wire LED operation:** Connect the access control panel's/reader interface's red LED output to the RED terminal and the access control panel's/reader interface's green LED output to the GRN terminal. The reader's red LED turns on when the access control panel/reader interface provides 0 volts DC to the input for the red LED. The reader's green LED turns on when the access control panel/reader interface provides 0 volts DC for the green LED. **One-wire LED operation:** Connect the access control panel's/reader interface's LED output to the RED terminal. The reader's LEDs are controlled as shown below. **Input signal** / **LED response** 0 volts DC / Green LED ON 5 volts DC / Red LED ON Not driven / Both LEDs OFF **Note:** *The signals provided to the Reader LED input and the Sounder input must be greater than 3.5 volts DC to be interpreted as a 5 volts DC signal. Signals with voltage less than .8 volts DC are interpreted as 0 volts DC (connection to ground (GND).*	**DIP switch 1** configures this input for one-wire or two-wire operation.
BPR & GND (on J2) Sounder input	Input for the sounder control signal from the access control panel/reader interface. By default, the lock's sounder turns on when the access control panel/reader interface closes the contact for the sounder, connecting the panel interface circuit board's BPR terminal to ground (GND).	**DIP switch 7** provides the ability to invert the interpretation of the sounder input signal.
12V & GND (on J1) Power input	Input for 12 volts DC at .1 amp power supply. ***Caution:*** **To prevent damage and injury, connect the power supply after all other connections have been made.**	None

Note: *The two NC terminals on J2 are not used.*



Connect to access control panel/reader interface.

Figure 22b Connecting to the access control panel/ reader interface

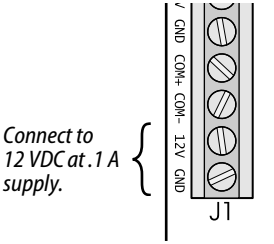


Figure 22c Connecting to the power supply

Installing the panel interface module

24 Set panel interface module DIP switches

Set the DIP switches on the panel interface circuit board. Refer to the table below. Default settings are shown in boldface.

25 Set and connect power supply

1 Make sure that the output voltage of the power supply for the panel interface module and lock is set to 15 volts DC or lower.
2 Make the final power supply connections.
3 Adjust the power supply output voltage to 13.8 volts DC.

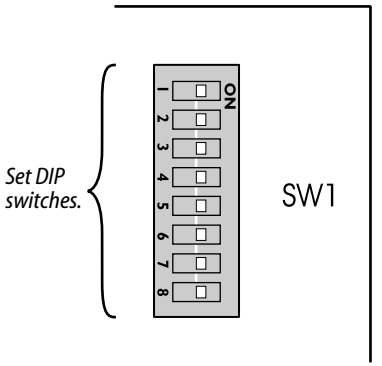


Figure 23 Setting DIP switches

Setting DIP switches

Feature	Option	DIP Switch Setting
Reader LED input configuration Provides the ability to select between one-wire and two-wire LED operation for the reader LED input.	Two-wire operation	Switch 1–ON
	One-wire operation	**Switch 1–OFF**
Baud rate selection Provides the ability to select the baud rate for communication between the panel interface circuit board and the lock's control electronics circuit board. **Note:** *To control the baud rate using DIP switches 2 and 3 on the panel interface circuit board, DIP switches 6 and 7 on the control electronics circuit board both must be set to ON (automatic baud rate detection).*	38400 bps	Switch 2–OFF Switch 3–OFF
	19200 bps	Switch 2–ON Switch 3–OFF
	9600 bps	**Switch 2–OFF Switch 3–ON**
	2400 bps	Switch 2–ON Switch 3–ON
Request-to-exit (RQE) status output configuration Provides the ability to invert the request-to-exit (RQE) status signal. If DIP switch 4 is ON, the contact is closed when the door knob/lever is turned, activating the RQE switch.	**Normally-open (NO)**	**Switch 4–ON**
	Normally-closed (NC)	Switch 4–OFF
Door status & latchbolt status / Door status output configuration Provides the ability to invert the signal for this output. If DIP switch 8 is ON and DIP switch 5 is ON, the contact is closed when the door is secure (the door status switch & latchbolt status switch are closed). If DIP switch 8 is OFF and DIP switch 5 is ON, the contact is closed when the door is unsecured (the door status switch is closed).	**Normally-closed (NC)**	**Switch 5–ON**
	Normally-open (NO)	Switch 5–OFF
Communication tamper / Latchbolt status output configuration Provides the ability to invert the signal for this output. If DIP switch 8 is ON and DIP switch 6 is ON, the contact is closed when the communication connection between the panel interface circuit board and the lock's control electronics circuit board is OK. If DIP switch 8 is OFF and DIP switch 6 is ON, the contact is closed when the latchbolt is extended (the latchbolt status switch is closed).	**Normally-closed (NC)**	**Switch 6–ON**
	Normally-open (NO)	Switch 6–OFF

continued

<table>
<tr><th>Feature</th><th>Option</th><th>DIP Switch Setting</th></tr>
<tr><td rowspan="2">Sounder input configuration
Provides the ability to invert the interpretation of the sounder input signal. The normal input configuration interprets a closed contact as sounder ON.</td><td>Normal input</td><td>Switch 7–ON</td></tr>
<tr><td>Inverted input</td><td>Switch 7–OFF</td></tr>
<tr><td rowspan="2">Function of TPR terminals and DLS terminals
Provides the ability to determine the function of the TPR terminals and DLS terminals, as shown below.
<table>
<tr><th>Configuration option</th><th>Function of TPR terminals</th><th>Function of DLS terminals</th></tr>
<tr><td>Option 1 (Switch 8–ON)</td><td>Communications tamper</td><td>Door status & latch status</td></tr>
<tr><td>Option 2 (Switch 8–OFF</td><td>Latch status</td><td>Door status</td></tr>
</table></td><td>Option 1</td><td>Switch 8–ON</td></tr>
<tr><td>Option 2</td><td>Switch 8–OFF</td></tr>
</table>

Testing the installation

Perform the following steps to test the installation. Also, perform any standard testing recommended by the manufacturer of the access control panel. If you encounter problems, see *Troubleshooting the installation,* on page 24.

1 Check the control electronics' green status LED and the panel interface module's green status LED.

Both LEDs should be blinking, indicating that the communication connection between the panel interface circuit board and the lock's control electronics circuit board is OK.

2 After performing any necessary programming for the lock and putting the door in a locked mode, use a valid token to access the lock.

Confirm that the red reader LED, green reader LED, and sounder respond as expected.

The lock should allow access, verifying that the solenoid is working.

To check that the reader is working, view the lock's event history and verify that the information recorded for the token is correct.

3 Use an invalid token to attempt to access the lock.

Confirm that the red reader LED, green reader LED, and sounder respond as expected.

The lock should deny access.

4 With the door armed, attempt to exit through the door.

The request-to-exit (RQE) feature should let you exit without triggering an alarm by the access control panel.

5 Remove power from the lock and check whether the door remains locked or is unlocked.

Verify that the lock fails safe or secure, according to its function.

6 With the door armed, hold the door open. Hold a magnet against the edge of the door, over the door status sensor, until the access control panel sees the door as closed. Then remove the magnet.

Verify that the appropriate alarm response is triggered by the access control panel, indicating that the door status sensor is working.

7 With the door armed, hold the door open. Hold a magnet against the edge of the door, over the door status sensor, until the access control panel sees the door as closed. With the magnet in place, push in the latchbolt.

Verify that the appropriate alarm response is triggered by the access control panel, indicating that the latchbolt status sensor is working.

Troubleshooting the installation

To troubleshoot installation problems, refer to the table below. For more information, refer to the *W Series Service Manual* (T60775) and to the documentation provided by the manufacturer of the access control panel/reader interface.

You notice . . .	**Possible causes include . . .**	**You should . . .**
Control electronics' green status LED and panel interface module's green status LED are steadily on. **Note:** *You can check the control electronic's green status LED by removing the access door from the inside trim. You can see the reflection of the LED inside the upper-left corner of the trim.*	Communication between the lock's control electronics circuit board and the panel interface circuit board has been interrupted.	Make sure DIP switches 6 and 7 on the lock's control electronics circuit board are both set to ON (automatic baud rate detection) or to the same positions as DIP switches 2 and 3 on the panel interface circuit board. Check the connections for all communication field wiring. Check the communication connections between the field wire harness and the wire transfer hinge.
Control electronics' green status LED is off.	Power is not being supplied to the lock.	Make sure that the lock's power supply is connected to electrical service. Check the connections for all power field wiring to the lock. Check the power connections between the field wire harness and the wire transfer hinge.
Panel interface module's green status LED is off.	Power is not being supplied to the panel interface module.	Check the connections for power wiring between the panel interface module and the access control panel (or other power source).
A 'door forced' alarm occurs when someone exits through the door.	RQE wiring, and door status and/or latchbolt status wiring, is reversed between the panel interface module and the access control panel/reader interface.	Refer to *Connect panel interface module to access control panel/reader interface*, on page 19, and correct the wiring problem.

BEST ACCESS SYSTEMS
Indianapolis, Indiana

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Installation Instructions for 83KW/93KW–85KW/95KW IDH Max Cylindrical Locks

Overview

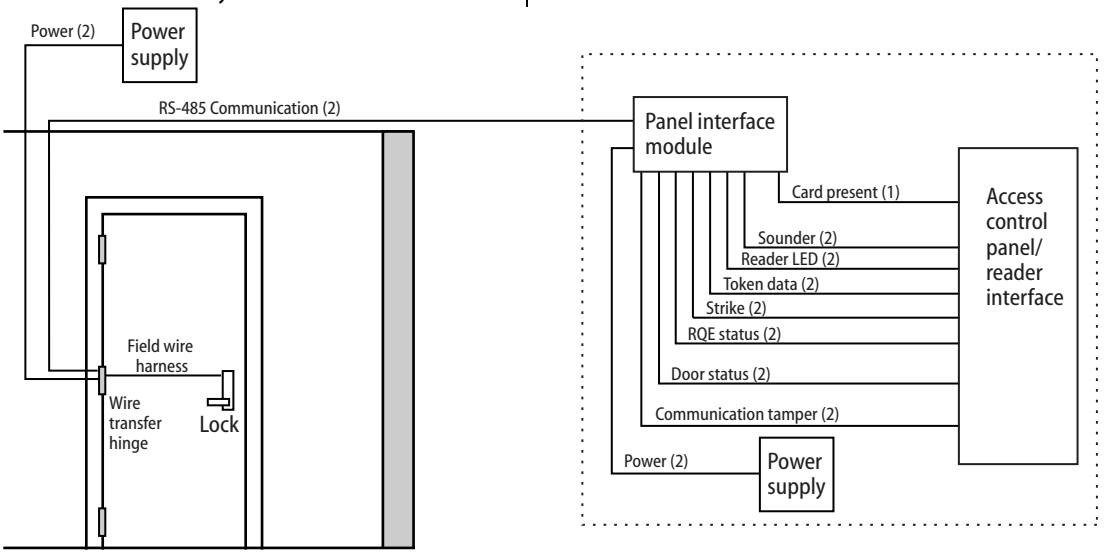
The 83KW/93KW–85KW/95KW IDH Max Cylindrical Lock provides the following features in an integrated lock, eliminating the need to install separate sensors in and around the door frame:

- electrified locking mechanism
- electronic token reader
- integrated trim
- door status detection
- ability to exit without triggering an alarm
- compatibility with varied access control panels/ reader interfaces.

Note: *For a list of compatible access control panels/ reader interfaces, contact your local BEST representative.*

A panel interface module is provided with the lock. The panel interface module receives token data and lock sensor data from the lock through an RS-485 connection. It translates this data into parallel signals, which it sends to the access control panel/reader interface. The panel interface module also translates control signals received from the access control panel/reader interface and sends them to the lock.

The figure below shows the relationship between the components in the IDH Max system.



Contents

These installation instructions describe how to install, wire, and configure the components provided with your 83KW/93KW–85KW/95KW IDH Max Cylindrical Lock. The following topics are covered.

Site survey

Use the following survey to record information about the installation site. You need this information to determine field wiring needs, select a power supply, and determine how to prepare the door for the lock.

Lock information

Lock function:

- ❑ DDEL–Electrically locked
- ❑ DDEU–Electrically unlocked

Power source for lock:

- ❑ Separate power supply
- ❑ Power provided through panel interface module

Power source for panel interface module:

- ❑ Separate power supply
- ❑ Power provided through access control panel

Distance of lock site from lock power source: _____ feet

Distance of lock site from panel interface module site: _____ feet

Door information

Door handing and bevel:

- ❑ Left hand (LH)
- ❑ Left hand, reverse bevel (LHRB)
- ❑ Right hand (RH)
- ❑ Right hand, reverse bevel (RHRB)

Door thickness: _____ inches (1 3/4″ – 2 1/4″; 1 3/8″ with spacer)

Environment information

Ambient temperature:

- ❑ Is within specifications. See the tables below.

This product meets the following Locked Door Outdoor test requirements for ANSI/BHMA 156.25:

Side of door	Range
Inside	+66°F to +74°F (+19°C to +23°C)
Outside	–31°F to +151°F (–35°C to +66°C)

This product meets the following Full Indoor test requirements for ANSI/BHMA 156.25:

Side of door	Range
Inside and outside	+32°F to +120°F (0°C to +49°C)

Components checklist

Use the following checklist to make sure that you have the items necessary to install the components provided with your 83KW/93KW–85KW/95KW IDH Max Cylindrical Lock.

Components provided in the box:

- ❑ Chassis with outside knob/lever and outside rose liner assembly
- ❑ Inside escutcheon assembly with field wire harness
- ❑ Inside escutcheon access door
- ❑ Inside rose liner with RQE feature
- ❑ Outside escutcheon assembly
- ❑ Inside knob/lever
- ❑ Throw member package
- ❑ Latch
- ❑ Door status switch & magnet assembly
- ❑ Plastic bushing package
- ❑ Hub washers
- ❑ Trim hole insert package
- ❑ Escutcheon screw package
- ❑ Panel interface module
- ❑ Strike package
- ❑ Bar code ID sticker (for your records)

Other items you'll need:

- ❑ Power supply for one IDH Max Cylindrical Lock (if you're providing a separate power supply): regulated; 12 volts DC at .85 amps

  Note: *If you intend to power more than one lock with the same power supply, calculate the amperage for the power supply by multiplying .85 by the number of IDH Max Cylindrical Locks (1.1 by the number of IDH Max Mortise Locks).*

- ❑ Power supply for the panel interface module (if you're providing a separate power supply): 12 volts DC at .1 amp
- ❑ Wire transfer hinge: 8 conductors min.; 28 AWG min.

continued

Components checklist

❑ Field wiring for power connections between the lock and power supply or the lock and panel interface module.

If you're powering the lock(s) through the panel interface module, calculate the total length of the power wire run by summing:

- The distance from the power supply to the panel interface module.
- The distance from the panel interface module to the first door.
- If powering more than one door daisy-chained to the same power supply, add the total distance of the power runs between the doors.

If you're powering the lock(s) using a separate power supply, calculate the total length of the power wire run by summing:

- The distance from the power supply to the first door.
- If powering more than one door daisy-chained to the same power supply, add the total distance of the power runs between the doors.

Refer to the table below to determine the minimum wire gauge based on the number of doors sharing the power supply and the total length of the wire run.

Maximum wire length based on no. of doors daisy-chained to power supply				Minimum wire gauge
1 door	2 doors	3 doors	4 doors	
250 feet	125 feet	75 feet	60 feet	18 AWG
400 feet	200 feet	130 feet	100 feet	16 AWG
600 feet	300 feet	185 feet	150 feet	14 AWG

❑ Field wiring for RS-485 communication connections between the lock and panel interface module (4000 feet maximum):
Category 5, shielded twisted pair; 24 AWG min.

Special tools checklist

Use the following checklist to make sure that you have the special tools necessary to install the components provided with your 83KW/93KW–85KW/95KW IDH Max Cylindrical Lock.

❑ Three (3) to four (4) foot, 3/8″ drill bit

❑ KD303 Drill jig

❑ T15 TORX® bit driver‡

‡ TORX is a registered trademark of the Camcar Division of Textron.

Preparing the door and door jamb

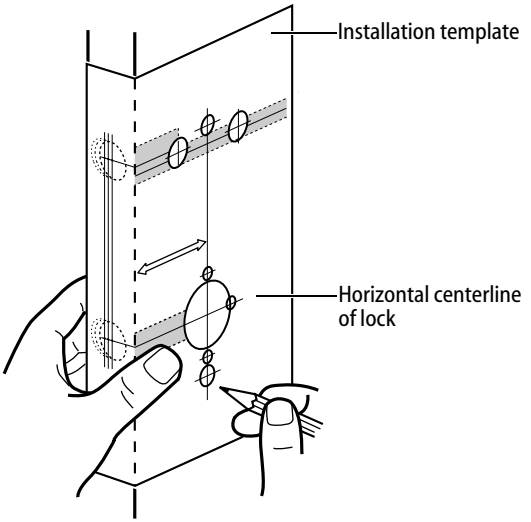


Figure 1 Positioning the template

1 Position template and mark drill points

Note: *If the door is a fabricated hollow metal door, determine whether it is properly reinforced to support the lock. If door reinforcement is not adequate, consult the door manufacturer for information on proper reinforcement. For dimensions for preparing metal doors, see the* W14 Template—Installation Specifications for 83KW/93KW–85KW/95KW IDH Max Cylindrical Locks*.*

Note: *If the door is a LH or RH door, mark the inside of the door. If the door is a LHRB or RHRB door, mark the outside of the door.*

For uncut doors and frames

1 Measure and mark the horizontal centerline of the knob/lever (the centerline for the chassis hole) on the door and door jamb. Mark the vertical centerline of the door edge.

Note: *The recommended height from the floor to the centerline of the lock is 38″.*

2 Fold the *W16 Template—Installation Template for 83KW/93KW IDH Max Cylindrical Locks* on the dashed line and carefully place it in position on the high side of the door bevel.

Note: *For steel frame applications, align the template's horizontal centerline for the latch with the horizontal centerline of the frame's strike preparation.*

3 Tape the template to the door.

4 Center punch the necessary drill points. Refer to the instructions on the template.

For doors with standard cylindrical preparation

1 Fold the *W16 Template—Installation Template for 83KW/93KW IDH Max Cylindrical Locks* on the dashed line. Looking through the hole from the opposite side of the door, align the template so that you see the template outline of the 2 1/8″ diameter hole.

2 Tape the template to the door.

3 Center punch the necessary drill points. Refer to the instructions on the template.

Preparing the door and door jamb

2 Drill holes and mortise for latch face

1 Drill the holes listed below:

- upper and lower trim holes
  — 5/8″ diameter
  — through door
- door status switch & LH/LHRB reader wire hole
  — 7/8″ diameter
  — through door
- field harness & RH/RHRB reader wire hole
  — 7/8″ diameter
  — through door
- door status switch hole
  — 1″ diameter
  — meets door status switch & LH/LHRB reader wire hole
- solenoid wire hole
  — 3/8″ diameter
  — through door
  — before drilling chassis hole
- chassis hole
  — 2 1/8″ diameter
  — through door
  — after drilling solenoid wire hole
- latch hole
  — 1″ diameter
  — meets chassis hole

Note 1: *To locate the center of a hole on the opposite side of the door, drill a pilot hole completely through the door.*

Note 2: *For holes through the door, it is best to drill halfway from each side of the door to prevent the door from splintering.*

2 Mortise the edge of the door to fit the latch face.

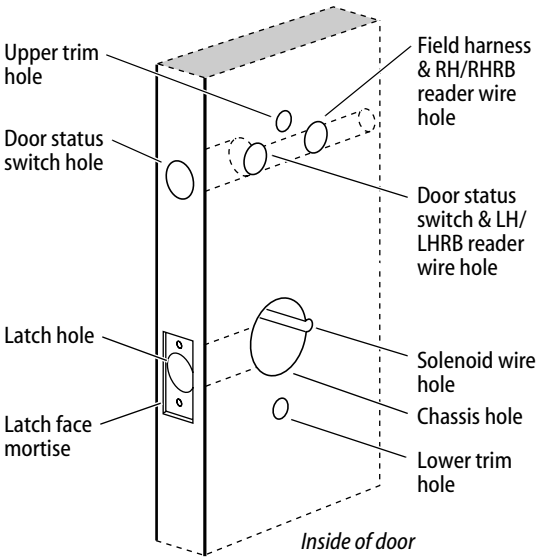


Figure 2 Drilling holes and mortising for the latch face

Preparing the door and door jamb

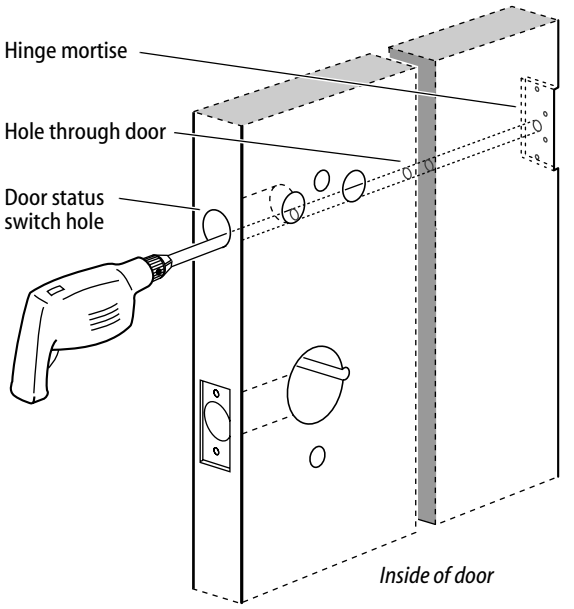


Figure 3 Drilling the hole for the field wire harness

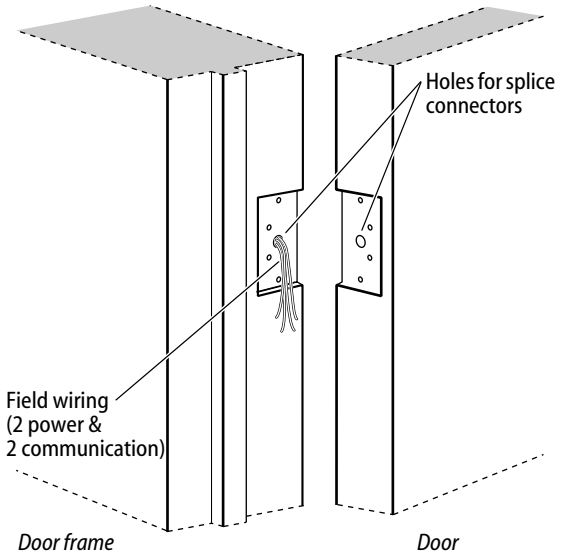


Figure 4 Preparing for the wire transfer hinge

3 Drill hole for field wire harness

Caution 1: **Check with your local fire marshal before drilling a fire-rated door. Drilling through a fire-rated door may void the fire label.**

Caution 2: **Drill carefully through the door, making sure the drill does not break through the face of the door.**

1 Remove the hinge nearest to the door status switch hole.

2 Using a three (3) to four (4) foot drill bit, drill a 3/8″ diameter hole through the door, from the bottom of the door status switch hole to the center of the hinge mortise.

Note: *It may be easier to drill halfway from each side of the door.*

4 Prepare for wire transfer hinge and run field wiring

1 Drill a wire access hole through the frame side of the hinge mortise.

2 Drill holes (or pockets) for the splice connectors in the frame and door. Refer to the hinge manufacturer's specifications for the hole location.

3 De-burr the holes to prevent damage to the hinge leads.

4 Run the power field wiring from the location for the lock's power supply to the location for the wire transfer hinge.

Note: *For an overview of the system, see the figure on page 1. For specifications for power and communication field wiring, see* Components checklist*, on page 2.*

5 Run the communication field wiring from the location for the panel interface module to the location for the door transfer hinge.

6 Pull the field wiring down the wall and through the access hole in the frame.

Preparing the door and door jamb

5 Install latch

1 Install the latch in the door.

Note: *The latch tube prongs should be centered and should project into the chassis hole.*

2 Check that the door swings freely.

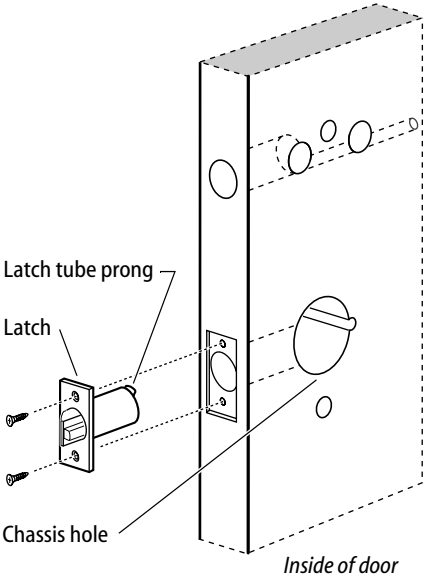


Figure 5 Installing the latch in the door

6 Use drill jig to drill through-bolt holes (9KW only)

1 Press the drill jig (KD303) onto the door, engaging it with the latch tube prongs. Make sure the front edge of the jig is parallel with the door edge.

2 Drill the through-bolt holes (5/16″ diameter) halfway into the door.

3 Turn the drill jig over and repeat steps 1 and 2 from the opposite side of the door.

Note: *Replace the drill jig after 10 door preparations.*

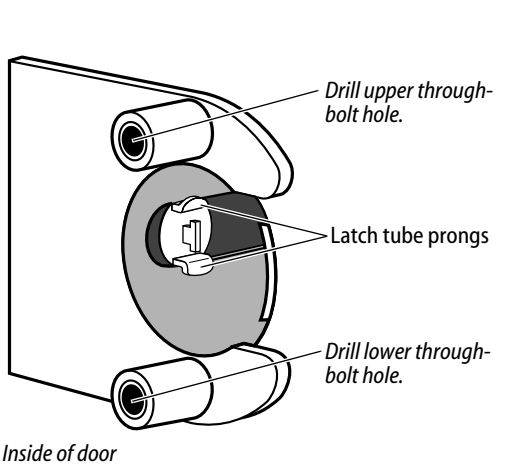


Figure 6 Installing the drill jig and drilling the through-bolt holes

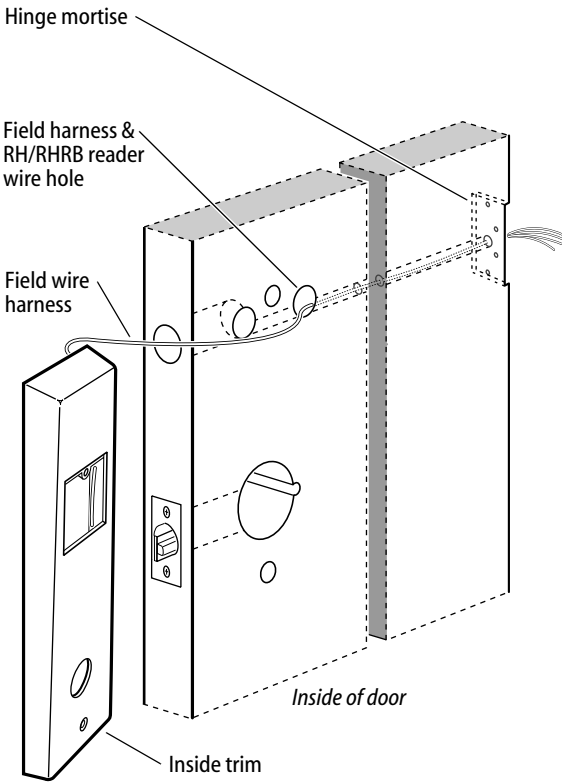


Figure 7 Pulling the field wire harness through the door

7 Pull field wire harness through door

1 Feed the field wire harness (connected to the inside trim) into the field harness & RH/RHRB reader wire hole and down into the hole drilled through the door to the hinge mortise.

2 From the latch edge of the door, fish the field wire harness through the door to the hinge mortise.

3 Make sure there are 3″ to 4″ of slack in the field wire harness to allow access to the control electronics circuit board in the inside trim.

Note: *You can let the trim dangle from the field wire harness while completing tasks 8 through 15.*

Preparing the door and door jamb

8 Install door status switch and magnet

1 On the door jamb, mark the drill point for the 1″ diameter magnet hole. This hole should be directly opposite the door status switch reader wire hole when the door is closed.
2 Drill a 1″ diameter hole for the magnet, at least 1 3/4″ deep.
3 Insert the magnet in the hole.
4 Insert the door status switch assembly into the door status switch hole in the edge of the door, feeding the connectors out the wire hole to the inside of the door, as shown in Figure 8.

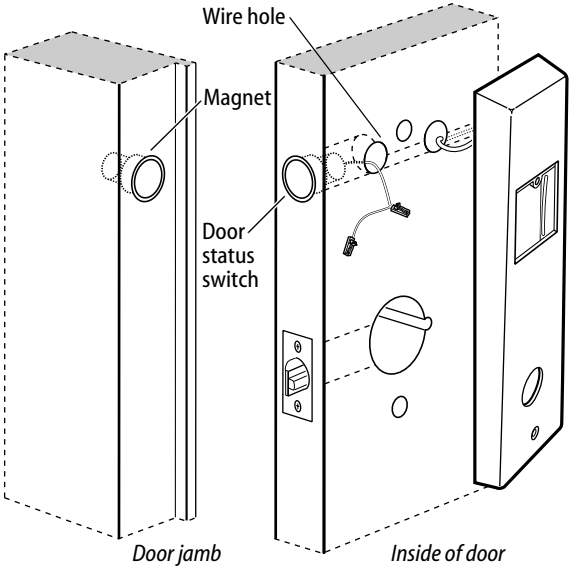


Figure 8 Installing the door status switch and magnet

9 Install strike box and strike plate

1 In alignment with the center of the latchbolt, mortise the door jamb to fit the strike box and strike plate.
2 Insert the strike box and secure the strike with the two screws provided.
3 Check the position of the deadlocking plunger against the strike plate.

Caution: **The deadlocking plunger of the latchbolt must make contact with the strike plate, as shown in Figure 9b. The plunger deadlocks the latchbolt and prevents someone from forcing the latch open when the door is closed.**

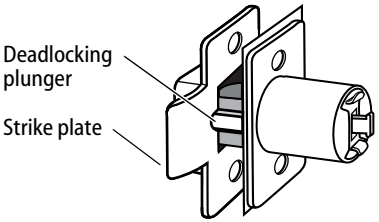


Figure 9b Aligning the deadlocking plunger with the strike plate

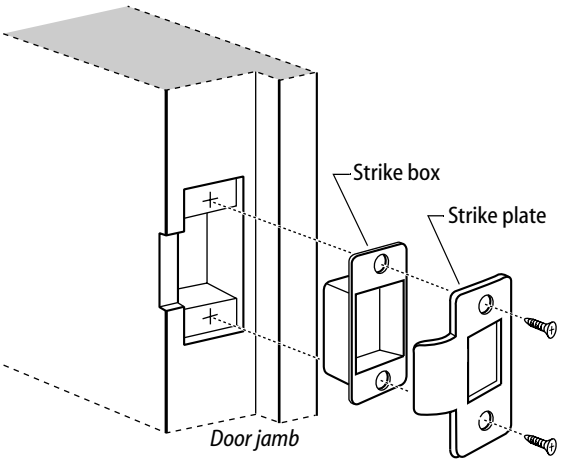


Figure 9a Installing the strike box and strike plate

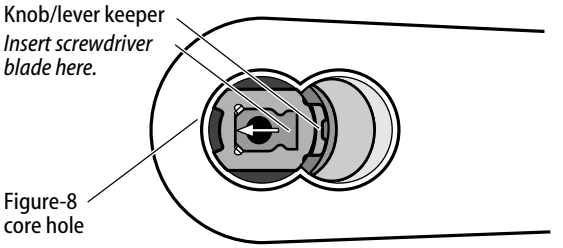


Figure 10 Removing the outside knob/lever

10 Remove outside knob/lever

1 Insert the control key into the core and rotate the key 15 degrees to the right.
2 Insert a flat blade screwdriver into the figure-8 core hole and into the knob/lever.
3 Press the screwdriver blade in the direction of the arrow in Figure 10.

Note: *You cannot remove the knob/lever if the screwdriver blade is inserted too far past the keeper.*

4 Slide the knob/lever off of the sleeve.

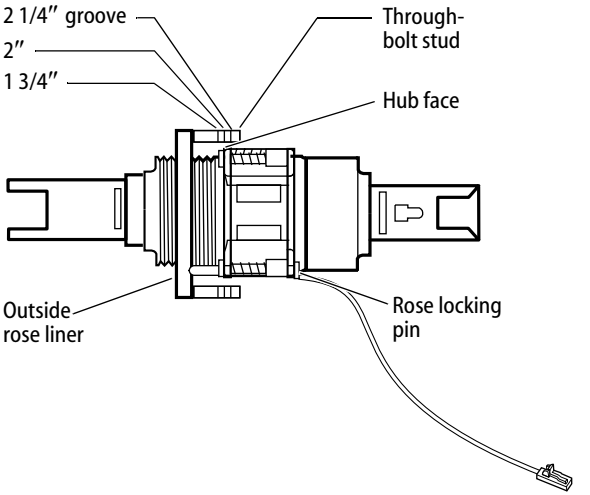


Figure 11 Adjusting the rose liner for the door thickness

11 Adjust for door thickness

1 Determine the door's thickness.
2 Pull the rose locking pin and rotate the outside rose liner until the proper groove on the through-bolt stud lines up with the hub face.

Note 1: *Make sure that the locking pin fully locks into the rose liner.*

Note 2: *The lockset fits doors 1 3/4″ to 2 1/4″ thick. (A spacer is available for 1 3/8″ doors.)*

Installing the lock & through-bolt trim

12 Install lock chassis and engage retractor in latch

From the outside of the door, insert the lock chassis into the 2 1/8″ chassis hole, routing the solenoid wire through the notch.

Caution: **Make sure that the latch tube prongs engage the chassis frame and that the latch tailpiece engages the retractor.**

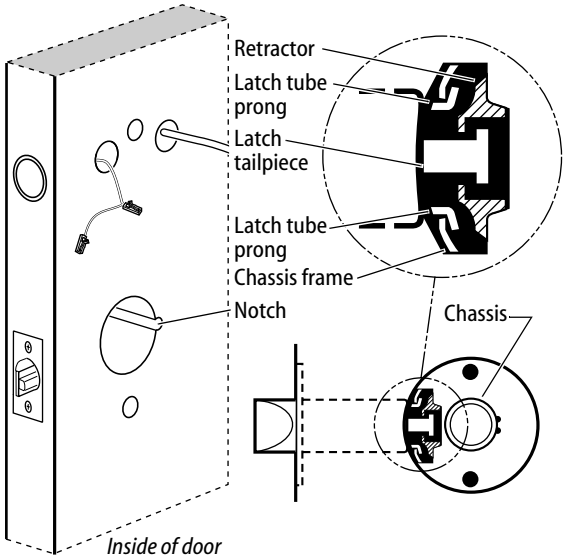


Figure 12 Installing the lock chassis and engaging the retractor in the latch

13 Install through-bolts and RQE rose liner

1 Place the RQE rose liner on the chassis, aligning the holes in the rose liner with the holes prepared in the door.

Caution: **Make sure that there is clearance for the solenoid wire between the RQE rose liner and the door.**

2 Install the through-bolts through the RQE rose liner and door in the top and bottom holes.

3 Tighten the RQE rose liner on the door with the through-bolts.

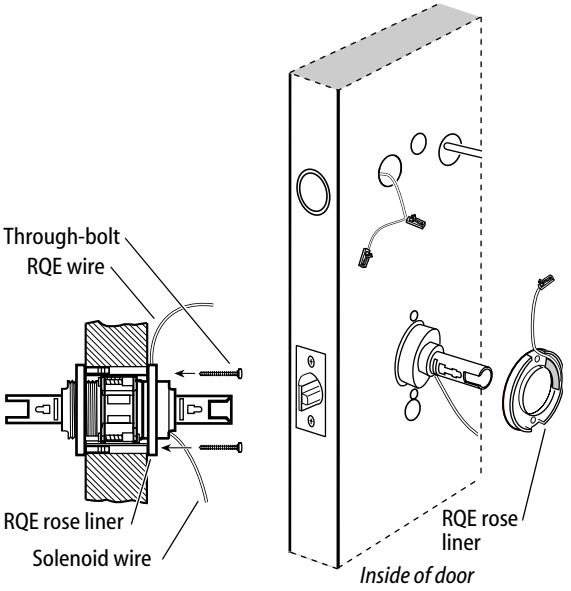


Figure 13 Installing the through-bolts and RQE rose liner

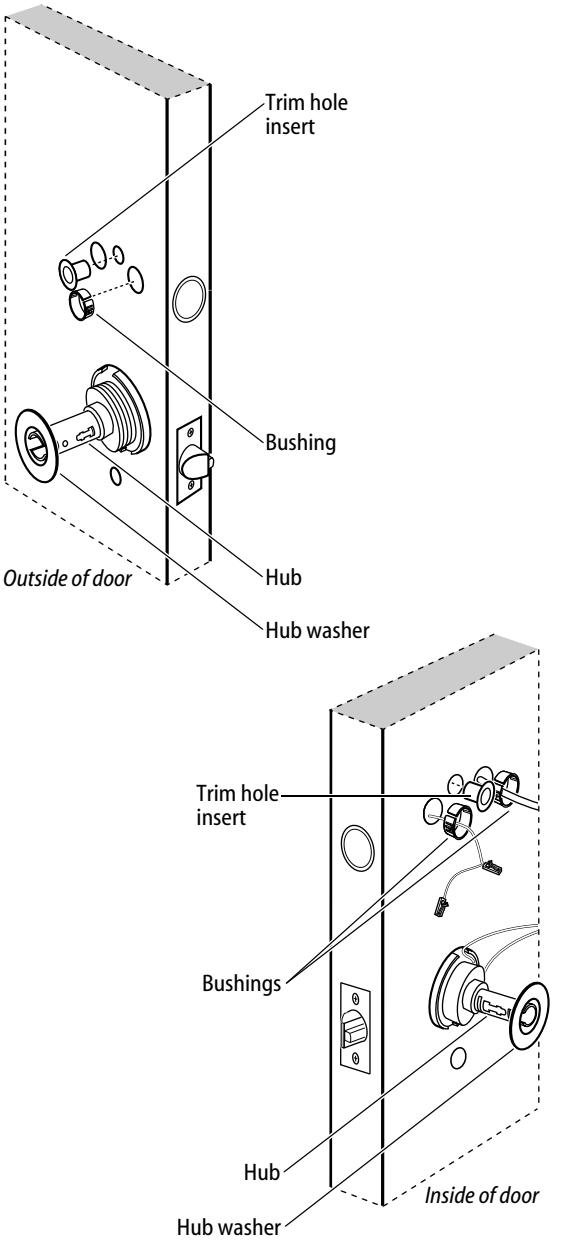


Figure 14 Installing the trim hole inserts, bushings, and hub washers

14 Install trim hole inserts, bushings, and hub washers

1 Insert the two trim hole inserts into the upper trim hole on each side of the door, as shown in Figure 14.

2 **For LH and LHRB doors**

Insert two bushings into the door status switch & LH/LHRB reader wire hole on each side of the door, as shown in Figure 14.

For RH and RHRB doors

Insert two bushings into the field harness & RH/RHRB reader wire hole on each side of the door.

3 Insert a bushing into the remaining wire hole on the inside of the door, as shown in Figure 14.

4 On each side of the door, slide a hub washer over the chassis sleeve so it rests on the hub.

Note: *You do **not** need to change the positions of the DIP switches on the control electronics circuit board located in the inside escutcheon.*

- *By default, switches 1 through 5 are set to ON. These switches are for possible future applications.*
- *By default, switches 6 and 7 are set to ON for automatic baud rate detection. This setting lets you determine the baud rate for communication between the lock's control electronics circuit board and the panel interface module by setting DIP switches on the panel interface circuit board. (See page 22.)*
- *Switch 8 is set to OFF for locks with a swipe-type magnetic stripe card reader, a proximity reader, or a keypad reader; it is set to ON only for locks with an insertion-type magnetic stripe card reader.*

Installing the lock & through-bolt trim

15 Connect reader wire harness

1 **For LH and LHRB doors**

From the outside of the door, feed the reader wire harness connector through the door status switch & LH/LHRB reader wire hole.

For RH and RHRB doors

From the outside of the door, feed the reader wire harness connector through the field harness & RH/RHRB reader wire hole.

Caution: **When routing the reader wire harness, make sure the reader wire harness is not routed across any sharp edges or over any surface that could damage its sleeving or wire insulation.**

2 Temporarily rest the outside trim on the door by inserting the trim studs into the trim holes.

3 Connect the reader wire harness to the control electronics circuit board in the inside trim.

Caution: **When connecting the reader wire harness, make sure:**

- **there are no loose wire connections where the wires are inserted into the reader wire connector**
- **the reader wire harness connector is fully seated in its mating connector on the control electronics circuit board.**

4 From the inside of the door, feed the solenoid and sensor wire harness from the control electronics circuit board, as well as the sensor wires and the solenoid wire, through the large opening in the inside trim.

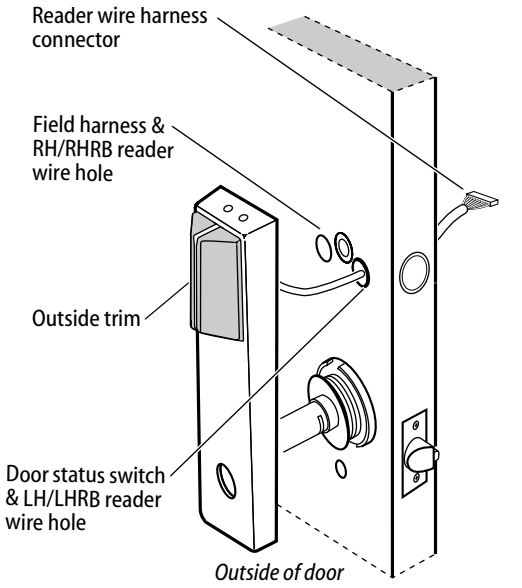


Figure 15a Feeding the reader wire harness connector through the wire hole

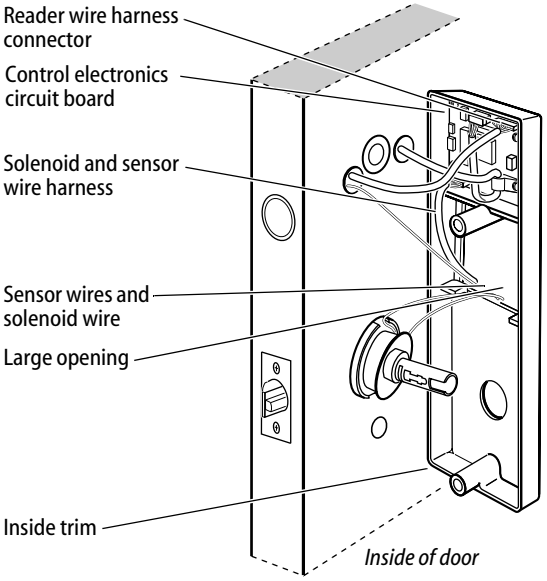


Figure 15b Connecting the reader wire harness to the control electronics circuit board

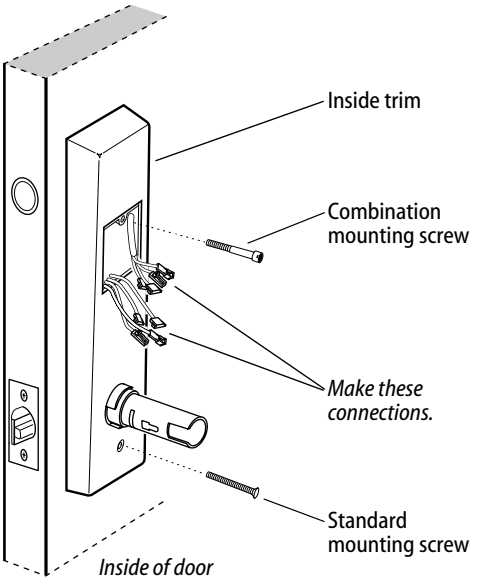


Figure 16 Securing the through-bolt trim and completing connections

16 Secure through-bolt trim and complete connections

1 Position the inside and outside trim onto the door.

2 **Making sure that the trim does not pinch the wires**, secure the trim to the door—but do not tighten. Use the combination mounting screw at the top trim hole and the standard mounting screw at the bottom trim hole.

***Caution:* When routing the solenoid and sensor wire harness, the sensor wires, and the solenoid wires, make sure the wires are not routed across any sharp edges or over any surface that could damage their sleeving or wire insulation.**

3 Make the three (3) sensor connections and solenoid connection, and place the wires into the inside trim.

Wire connection	Color	No. of wires	No. of pins
Solenoid	Yellow	2	3
RQE	Brn/Org	2	3
Shorting connection	Purple	2	2
Door status sensor	White	2	2

***Caution:* When making the sensor connections and solenoid connection, make sure:**

- **there are no loose wire connections where the wires are inserted into the connectors**
- **the connectors are firmly mated.**

Installing the lock & through-bolt trim

17 Install inside and outside knobs/levers

Note: *To use a core and throw member from a manufacturer other than BEST with a 9KW Lock, see the* Installation Instructions for 9K Non-interchangeable Cores & Throw Members *(T56093). Skip task 17 and task 18.*

1 **For the inside and outside knobs**

Push firmly on the knob until it is seated.

For the inside and outside levers

With the handle pointing toward the door hinges, push firmly on the lever until it is seated.

2 Tighten the trim mounting screws.

3 Turn the knobs/levers to check that they operate smoothly.

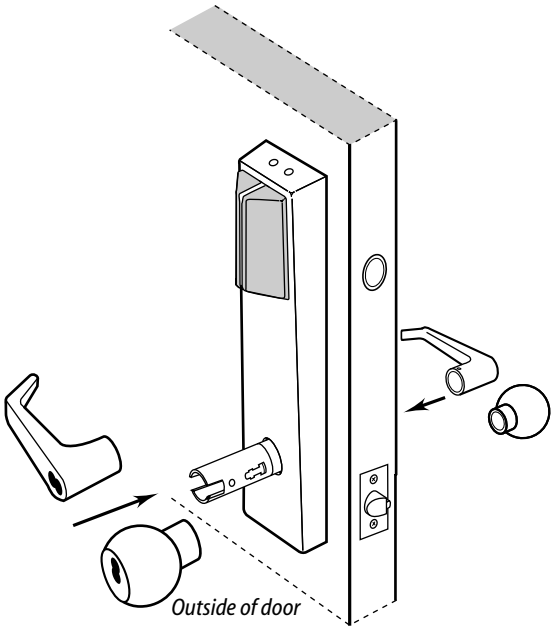


Figure 17 Installing the knobs/levers

Completing the installation at the door

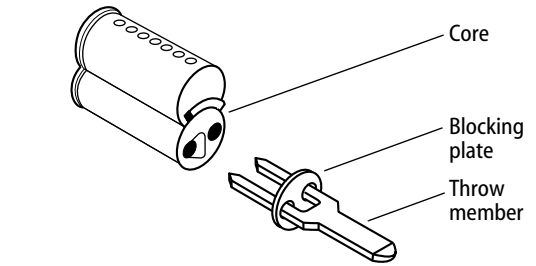


Figure 18a Installing the blocking plate and throw member

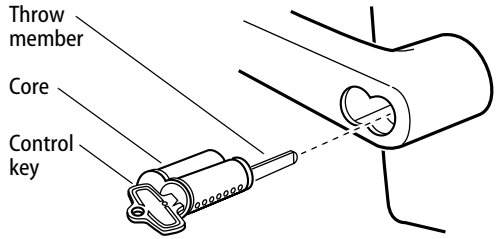


Figure 18b Installing the core

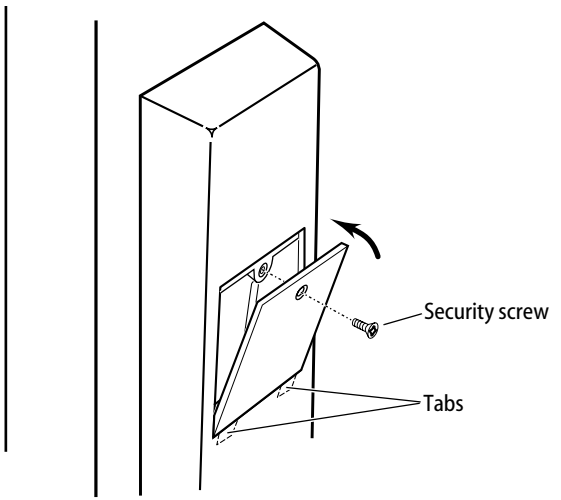


Figure 19 Installing the access door

18 Install core and throw member

1 Install the blocking plate onto the throw member.

Caution: **You must use the blocking plate to prevent unauthorized access.**

For 6-pin core users only: Install the plastic spacer (not shown, supplied with permanent cores) instead of the blocking plate, on the throw member.

2 Insert the control key into the core and rotate the key 15 degrees to the right.

3 Insert the throw member into the core.

4 Insert the core and throw member into the knob/lever with the control key.

5 Rotate the control key 15 degrees to the left and withdraw the key.

Caution: **The control key can be used to remove cores and to access doors. Provide adequate security for the control key.**

19 Install access door

1 **Making sure that the access door does not pinch any wires**, insert the tabs of the access door into its mating slots and swing the door closed.

2 Use a T15 TORX bit driver to secure the access door with the security screw. Tighten firmly.

Completing the installation at the door

20 Install wire transfer hinge

1 Trim the four wires of the field wire harness, which you pulled through the hinge edge of the door in Task 7. Leave sufficient length to connect to the wire transfer hinge.

2 Splice the power and communication field wiring to the four pairs of leads on the frame side of the hinge, following the hinge manufacturer's instructions.

3 Splice the four field harness wires (listed in the table below) to the four pairs of leads on the door side of the hinge, matching each pair of leads to its corresponding field wire.

Wire	Color
Ground	Black
12 VDC	Red
Com+	Orange
Com–	Green

4 Insert the wires and splice connectors into the holes or pockets in the door and frame, being careful not to pinch the wires. Install the wire transfer hinge.

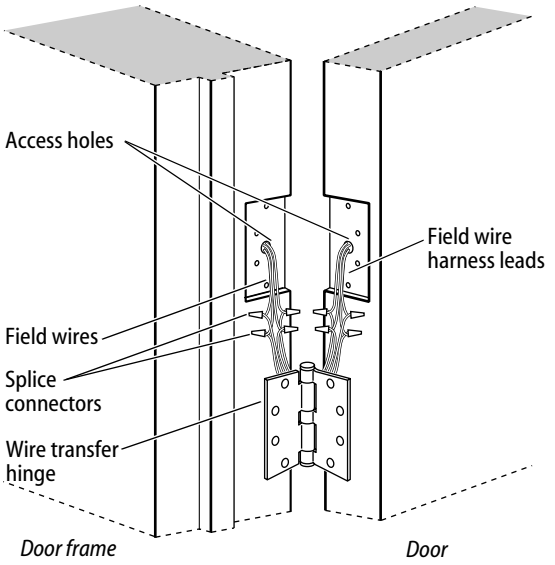


Figure 20 Installing the wire transfer hinge

21 Install lock power supply (optional)

If you are providing a separate power supply for the lock instead of providing power via the panel interface module, connect the two power field wires (run from the wire transfer hinge) to the power supply. Make sure power (12 volts DC) and ground are connected properly.

Follow the instructions provided by the power supply manufacturer. Do not plug in the power supply yet.

Note: *For specifications for the power supply, see* Components checklist*, on page 2.*

Installing the panel interface module

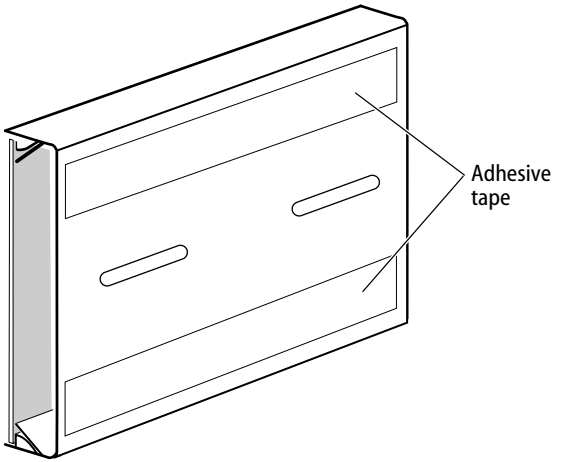


Figure 21 Mounting the panel interface module

22 Mount panel interface module

Peel the paper off the adhesive tape affixed to the back of the panel rail and press the panel rail into position.

Note: *Mount the panel interface module in the enclosure with the access control panel/reader interface, if possible.*

Installing the panel interface module

23 Connect field wiring from wire transfer hinge to panel interface module

1 Connect the two communication field wires (run from the wire transfer hinge) to the COM+ and COM– terminals on the panel interface circuit board.

Note: *The field wire harness leads, connected to the door side of the wire transfer hinge, are described in the table below.*

Wire	Color
Ground	Black
12 VDC	Red
Com+	Orange
Com–	Green

2 If you are providing power to the lock through the panel interface module, connect the two power field wires (run from the wire transfer hinge) to the 12V and GND terminals on the panel interface circuit board.

Note: *JP2 and JP3, shown in Figure 22a, are used for manufacturing purposes only.*

3 Connect the RS-485 shield wire to one of the GND terminals on J1.

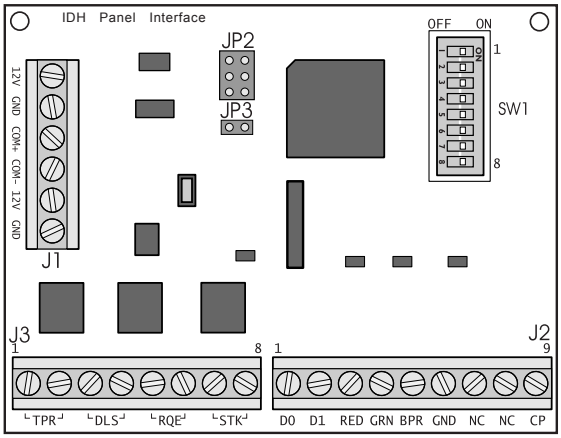


Figure 22a Panel interface circuit board

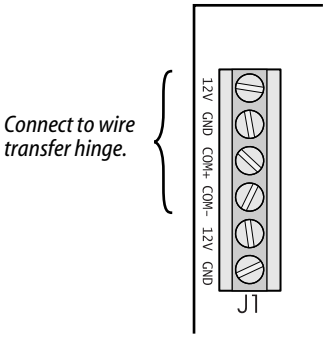


Figure 22b Connecting field wiring from the wire transfer hinge

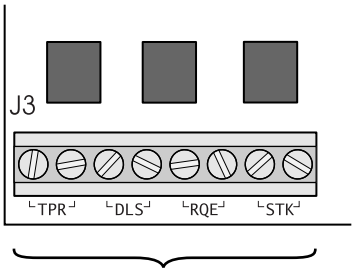


Figure 23a Connecting to the access control panel/ reader interface

24 Connect panel interface module to access control panel/reader interface

With power removed from the panel interface circuit board and the access control panel/reader interface, connect the wiring between the panel interface circuit board and the access control panel/reader interface. Refer to the table below.

Connecting to the access control panel/reader interface

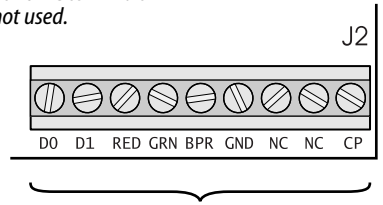
Terminals	Description	Related DIP switches
TPR (on J3) Communication tamper output	Switch-like output to the access control panel/reader interface that indicates the status of the communication connection between the panel interface circuit board and the lock's control electronics circuit board. By default, the output is closed to indicate communication is OK and open to indicate communication has been interrupted.	**DIP switch 6** provides the ability to invert the signal. Set **DIP switch 8** to ON.
DLS (on J3) Door status output	Switch-like output to the access control panel/reader interface that indicates the state of the lock's door status switch. By default, the output is closed to indicate the door status switch is closed. **Note:** *The lock's door status switch is closed when the door is closed.*	**DIP switch 5** provides the ability to invert the signal. Set **DIP switch 8** to ON.
RQE (on J3) Request-to-exit status output	Switch-like output to the access control panel/reader interface that indicates the status of the lock's RQE switch. By default, the output is closed to indicate the RQE switch is closed. **Note:** *The lock's RQE switch is closed when the door knob/lever is turned, activating the switch.*	**DIP switch 4** provides the ability to invert the signal.
STK (on J3) Strike input	Input from the access control panel's/reader interface's strike relay, which provides the solenoid control signal. The access control panel/reader interface output usually has normally open (NO) and normally closed (NC) terminals, as well as a common terminal. The common and NO terminals should be connected to the two STK terminals on J3. To invert the operation, use the access control panel's/reader interface's common and NC terminals. The operation of the solenoid varies by lock function. See the *W Series Service Manual* (T60775).	None
D0, D1, & CP (on J2) Token data output	D0 is the Data 0 (Wiegand) or Strobe (ABA) token data output to the access control panel/reader interface. D1 is the Data 1 (Wiegand) or Data (ABA) output. D0 and D1 are capable of transmitting up to 250 feet. **Note:** *The strobe signal is sometimes called 'clock'.* CP is the Card Present (ABA) output. The card present signal is low (0 volts DC) during output of ABA token data.	None

continued

Installing the panel interface module

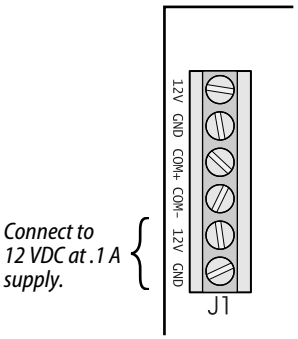
Terminals	Description	Related DIP switches
RED & GRN (on J2) Reader LED input	Input for the red and green LED control signal(s) from the access control panel/reader interface. This input is configured using DIP switch 1 for either one-wire LED operation or two-wire LED operation. **Two-wire LED operation:** Connect the access control panel's/reader interface's red LED output to the RED terminal and the access control panel's/reader interface's green LED output to the GRN terminal. The reader's red LED turns on when the access control panel/reader interface provides 0 volts DC to the input for the red LED. The reader's green LED turns on when the access control panel/reader interface provides 0 volts DC for the green LED. **One-wire LED operation:** Connect the access control panel's/reader interface's LED output to the RED terminal. The reader's LEDs are controlled as shown below. **Input signal** / **LED response**: 0 volts DC – Green LED ON; 5 volts DC – Red LED ON; Not driven – Both LEDs OFF **Note:** *The signals provided to the Reader LED input and the Sounder input must be greater than 3.5 volts DC to be interpreted as a 5 volts DC signal. Signals with voltage less than .8 volts DC are interpreted as 0 volts DC (connection to ground (GND).*	**DIP switch 1** configures this input for one-wire or two-wire operation.
BPR & GND (on J2) Sounder input	Input for the sounder control signal from the access control panel/reader interface. By default, the lock's sounder turns on when the access control panel/reader interface closes the contact for the sounder, connecting the panel interface circuit board's BPR terminal to ground (GND).	**DIP switch 7** provides the ability to invert the interpretation of the sounder input signal.
12V & GND (on J1) Power input	Input for 12 volts DC at .1 amp power supply. ***Caution:*** **To prevent damage and injury, connect the power supply after all other connections have been made.**	None

Note: *The two NC terminals on J2 are not used.*



Connect to access control panel/reader interface.

Figure 23b Connecting to the access control panel/ reader interface



Connect to 12 VDC at .1 A supply.

Figure 23c Connecting to the power supply

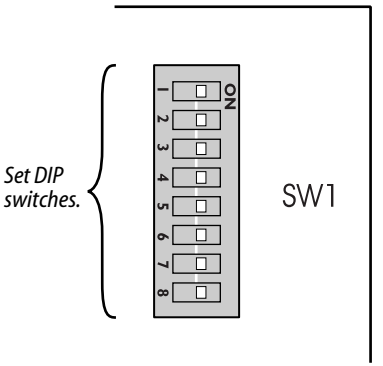


Figure 24 Setting DIP switches

25 Set panel interface module DIP switches

Set the DIP switches on the panel interface circuit board. Refer to the table below. Default settings are shown in boldface.

Note: *DIP switch 8 is used in IDH Max Mortise installations. Leave this switch set to ON.*

26 Set and connect power supply

1 Make sure that the output voltage of the power supply for the panel interface module and lock is set to 15 volts DC or lower.
2 Make the final power supply connections.
3 Adjust the power supply output voltage to 13.8 volts DC.

Setting DIP switches

Feature	Option	DIP Switch Setting
Reader LED input configuration Provides the ability to select between one-wire and two-wire LED operation for the reader LED input.	Two-wire operation	Switch 1–ON
	One-wire operation	**Switch 1–OFF**
Baud rate selection Provides the ability to select the baud rate for communication between the panel interface circuit board and the lock's control electronics circuit board. **Note:** *To control the baud rate using DIP switches 2 and 3 on the panel interface circuit board, DIP switches 6 and 7 on the control electronics circuit board both must be set to ON (automatic baud rate detection).*	38400 bps	Switch 2–OFF Switch 3–OFF
	19200 bps	Switch 2–ON Switch 3–OFF
	9600 bps	**Switch 2–OFF Switch 3–ON**
	2400 bps	Switch 2–ON Switch 3–ON
Request-to-exit (RQE) status output configuration Provides the ability to invert the request-to-exit (RQE) status signal. If DIP switch 4 is ON, the contact is closed when the door knob/lever is turned, activating the RQE switch.	**Normally-open (NO)**	**Switch 4–ON**
	Normally-closed (NC)	Switch 4–OFF
Door status output configuration Provides the ability to invert the signal for the door status output. If DIP switch 5 is ON, the contact is closed when the door is closed (the door status switch is closed).	**Normally-closed (NC)**	**Switch 5–ON**
	Normally-open (NO)	Switch 5–OFF
Communication tamper configuration Provides the ability to invert the signal for the communication tamper output. If DIP switch 6 is ON, the contact is closed when the communication connection between the panel interface circuit board and the lock's control electronics circuit board is OK.	**Normally-closed (NC)**	**Switch 6–ON**
	Normally-open (NO)	Switch 6–OFF
Sounder input configuration Provides the ability to invert the interpretation of the sounder input signal. The normal input configuration interprets a closed contact as sounder ON.	**Normal input**	**Switch 7–ON**
	Inverted input	Switch 7–OFF

Testing the installation

Perform the following steps to test the installation. Also, perform any standard testing recommended by the manufacturer of the access control panel. If you encounter problems, see *Troubleshooting the installation,* on page 24.

1 Check the control electronics' green status LED and the panel interface module's green status LED.

   Both LEDs should be blinking, indicating that the communication connection between the panel interface circuit board and the lock's control electronics circuit board is OK.

2 After performing any necessary programming for the lock and putting the door in a locked mode, use a valid token to access the lock.

   Confirm that the red reader LED, green reader LED, and sounder respond as expected.

   The lock should allow access, verifying that the solenoid is working.

   To check that the reader is working, view the lock's event history and verify that the information recorded for the token is correct.

3 Use an invalid token to attempt to access the lock.

   Confirm that the red reader LED, green reader LED, and sounder respond as expected.

   The lock should deny access.

4 With the door armed, attempt to exit through the door.

   The request-to-exit (RQE) feature should let you exit without triggering an alarm by the access control panel.

5 Remove power from the lock and check whether the door remains locked or is unlocked.

   Verify that the lock fails safe or secure, according to its function.

6 With the door armed, hold the door open. Hold a magnet against the edge of the door, over the door status sensor, until the access control panel sees the door as closed. Then remove the magnet.

   Verify that the appropriate alarm response is triggered by the access control panel, indicating that the door status sensor is working.

Troubleshooting the installation

To troubleshoot installation problems, refer to the table below. For more information, refer to the *W Series Service Manual* (T60775) and to the documentation provided by the manufacturer of the access control panel/reader interface.

You notice . . .	**Possible causes include . . .**	**You should . . .**
Control electronics' green status LED and panel interface module's green status LED are steadily on. **Note:** *You can check the control electronic's green status LED by removing the access door from the inside trim. You can see the reflection of the LED inside the upper-left corner of the trim.*	Communication between the lock's control electronics circuit board and the panel interface circuit board has been interrupted.	Make sure DIP switches 6 and 7 on the lock's control electronics circuit board are both set to ON (automatic baud rate detection) or to the same positions as DIP switches 2 and 3 on the panel interface circuit board. Check the connections for all communication field wiring. Check the communication connections between the field wire harness and the wire transfer hinge.
Control electronics' green status LED is off.	Power is not being supplied to the lock.	Make sure that the lock's power supply is connected to electrical service. Check the connections for all power field wiring to the lock. Check the power connections between the field wire harness and the wire transfer hinge.
Panel interface module's green status LED is off.	Power is not being supplied to the panel interface module.	Check the connections for power wiring between the panel interface module and the access control panel (or other power source).
A 'door forced' alarm occurs when someone exits through the door.	RQE wiring and door status wiring is reversed between the panel interface module and the access control panel/ reader interface.	Refer to *Connect panel interface module to access control panel/reader interface,* on page 20, and correct the wiring problem.

BEST ACCESS SYSTEMS
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